GUIDE TO SOUND TEETH,

OR

A POPULAR TREATISE

ON THE TEETH,

ILLUSTRATING THE WHOLE JUDICIOUS MANAGEMENT OF THESE ORGANS FROM INFANCY TO OLD AGE; IN WHICH THE AUTHOR WILL ATTEMPT TO SHOW, THAT THE TEETH OF ALL PERSONS WHICH ARE CONSTITUTIONALLY WELL FORMED, AND WHO ENJOY GOOD HEALTH, MAY, BY PROPER MANAGEMENT AND CARE, BE PRESERVED TO THE END OF LIFE.

BY SHEARJASHUB SPOONER, M. D.

Si opinio, de conservatione dentium, quam omnes homines, chirurgicâ scientiâ dentium instructi, hoc tompore, tenent, (nempe, ut dentes, per totam vitam preservati sint,) justa sit, ad usum generis humani, eam opinionem promulgari oportet.—*Vide Dissertationem Inauguralem Auctoris, pagina ix. Exordii.*

If it be true, that the teeth may be preserved to the end of life, as scientific surgeon dentists of the present day believe, the means by which this desirable object can be attained, should be promulgated for the benefit of mankind.

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INTRODUCTION.

Being about to present to the public, as our title page imports, a popular essay on the diseases and management of the teeth; it may not be altogether inappropriate, inasmuch as the work is not designed exclusively for the use of the dental profession, but for general utility, to render some of the principal reasons which have influenced us in undertaking, and guided us in the prosecution of it.

And first, the great propensity to disease, to which, in this our country, the teeth are unfortunately liable; and the consequent urgent necessity of some fixed and definite rules to guide the citizen to the means by which he may obviate the same, when it may be obviated, and when it may not be, to point out, next the appropriate and only safe means by which it may be effectually remedied; at least, so far as the individual case will admit of remedy.

Second, the existing necessity of such a work; there being none upon our subject, extant, that is at all applicable to popular use.

Third, a laudable desire to contribute our voluntary, though feeble aid, for the object of exalting the abused profession, of which we are a member, to that respectability which the imperious *necessity* of its existence in our country,

and the *utility* of its correct and faithful practice eminently entitle it to; and to shield it from that opprobrium which is too often cast upon it, not because it is intrinsically worthless, but because it is frequently rendered useless, nay, injurious by the host of those itinerant (I beg pardon, itinerant or resident) vagrants, who assume, for the sake of lucre, to manage the functions and discharge the duties of a profession, their ignorance of which, to say the least, is exceeded only by their impudence and rapacity, or their sordid love of unearned gain.

And another reason; if we be so fortunate as to treat our subject judiciously, to represent its merits faithfully, and to elucidate it clearly, in order that it may be more generally understood; to accomplish though partially, our design, as before expressed, that we may *possibly* derive an advantage tantamount to our trouble in executing the undertaking.

Thus, it will be seen that we have a tripple object; viz. to benefit community, our profession and ourselves.

But as to the latter, we are not so idly vain, as to expect, or hope that our exertions will be crowned with golden rewards, with literary fame, or with professional distinction; but rather, in aiding our profession to subserve the interests of community; to have that profession respectable, as it shall be useful; and to render ourselves useful in the sphere of our profession; aiming to participate in the general advantage.

Our design is to present a *familiar* treatise on the subject of the teeth; pointing out the most judicious management of these organs from infancy to old age. Such as the requisite care to be bestowed on them, by those who have the management of children; and subsequently, that, by the individual possessor himself; and that again, which it

is the province of the dentist to afford, when called for, which method of treatment, will be founded on such principles and practice, as is now sanctioned by all scientific and well instructed dentists. We shall endeavor to discriminate, and to make the point appear obvious to all interested, between care of, and neglect of the teeth; between judicious and injudicious treatment of them, by the individual possessor; between the advantage of a knowledge of their formation, structure, individual characters and diseases; and the disadvantages of an ignorance of them, in those, who attempt to treat them surgically; in fine, between the application of judicious and approved means, for the prevention and cure of their diseases; and the application of injudicious and incorrect ones—such a work, if successfully executed, is believed to be a dissideratum; and as such, cannot fail to be of great and general utility to community.

It is the opinion of scientific dentists of the present day, that the teeth of most persons may, by proper management, be preserved to the end of their lives. That this opinion is correct in the main, we unequivocally profess to believe; and shall use our best endeavors to prove; pointing out with as much precision as possible, the appropriate means to be employed, by which so desirable an object may be attained.

If the opinion be correct, it must appear obvious to any person who will reflect on the importance of the teeth as organs of mastication and of articulation; their influence upon our personal appearance and comfort; their extreme liability to disease, in our country; and on the injurious effects of that disease, operating upon the general system, through the pain and its consequent irritation induced, that the appropriate means for attaining so desirable and so

necessary an object, ought to be promulgated for the benefit of all.

The views of most persons with respect to the proper management of the teeth, unfortunately for themselves, are extremely erroneous, and for obvious reasons; viz. want of correct information relative to the full subject. And these views must needs be corrected, and this deficiency supplied, before the necessity of the practice of dental surgery, and its utility, as practiced on principles of science and integrity, (for such practice only we shall attempt to defend,) can become generally known and appreciated.

However useful may be the profession of dental surgery; however true may be the doctrine, that the teeth may be preserved to the end of the life of the individual; all will be of no avail to the citizen, unless he be seasonably apprised of the fact, in order that the means may be applied before they become inefficient by too long a delay in their application. For instance, many of the diseases of the teeth are best met by a preventive treatment; and such treatment should commence with earliest dentition, and should be directed subsequently according to the existence, progress and proneness to disease of each individual case. Children's teeth should be carefully inspected from time to time, and every obstacle to regularity promptly removed; early and habitual attention should be paid to cleanliness, and this accomplished too, by such agents as will have no injurious effects upon the teeth themselves, their sockets, the gums, or upon the healthy secretions of the mouth; to remove or rather prevent all incipient causes of caries, or of any other disease to which they or their appendages are liable. And no one, surely, can need argument to convince him, though he may need the suggestion to remind him, that it is infinitely better, on the score of utility,

comfort and economy, to preserve the natural teeth, than to neglect and lose them, and afterwards require, as substitutes, artificial ones. Hence we found the presumption, that a work like the one which we propose, upon this subject, will be of general utility.

The perusal of medical works by persons out of the profession, may probably be of no advantage to them; but the perusal of a judicious work upon the diseases and the best management of the teeth, especially in the present state of conflicting opinions on the subject, we think, will prove of essential service. And first, because, as has been before remarked, persons generally are unacquainted with the most proper means to be employed for the best security of the teeth: second, because such is the structure, nature, exposure and liability to decay of these organs, that every, thing relative to their preservation depends upon daily care, or a constant application of such of the means of preservation, as are naturally and necessarily within the province of the individual himself: and another circumstance; the situation of the teeth is such, and they often decay in such parts, that they are not unfrequently screened from the eye of the possessor, and even from that of an inexperienced operator, and defy his detection; and their structure is such, that the possessor is not sufficiently admonished of their very defective state, by their appeal to his sensibilities, until that state is become almost entirely hopeless, and consequently operations for the preservation of them useless. Resorting to remedies for them in this state, is like a sick man in the last stage of some organic disease applying to the physician for relief, who, notwithstanding he may have an accurate knowledge of the character, symptoms, progress and tendency of the disease; and with the very best means for combating it; yet, he can only palliate now, that, which in its inci-

pient state he might have cured. From this improvident care of the teeth, and from this injudicious management, this procrastinating process which invariably leads to evil, have arisen, we think, in a great measure the exagerated ideas relative to the pain of dental operations; and after all the solicitude and forebodings, and pain submitted to, and expense incurred,—the inutility of the process. But though much that is complained of, as the evils of dentistry, may be attributed to this childish, this improvident, this temporising mode of management of the teeth, dictated not by the best judgement of the individual, but rather forced upon him by his ill-founded fears, aided perhaps by his distrust of the efficacy of the treatment; yet more, much more to the host of *squatters* in our profession, who, like sin, "are a reproach to any people," who disgrace and abuse, nay, murder the profession; who first flatter their patient, then wheedle, then torture, then fleece, and then,—what? why,

> "To ease themselves of divers slanderous loads,
> they turn him off,
> Like to the empty ass, to shake his ears,
> And graze in commons."

Many persons have embraced the erroneous opinion that dental sugery is merely a mechanical art, and that its practice does not require much professional science or knowledge of the animal economy. But this is truly an error; and like all error, tends to delude, and exposes to imposition. It may properly be divided into two branches; viz. surgical and mechanical dentistry. To the latter belongs the substitution of artificial teeth upon plates, &c.; and to the former, the preservation of the natural ones, and all operations upon them that require an interference with the living fibre; which in effect, are truly and exclusively surgical, inasmuch as we are operating upon living parts;

and parts too, intimately connected with the living human system by virtue of that life, and of their functions.

Thus, we trust, that it will be made to appear evident in the sequel, that to practice dental surgery with success, a man must possess a knowledge of the animal economy, of its functions, of its diseases which influence the parts upon which he operates, and of the effects of the diseases of these parts upon the general system, operating through sympathy, or through painful irritation upon it: and a knowledge of the surgical and curative means sufficient to avoid all harsh and unnecessary infliction of pain, all unnecessary aggravation of irritation of diseased parts, and to be able to apply the most approved remedies for the mitigation of pain, and for the arrest of disease.

That there should be entertained by community, a contrariety of views relative to the requisite care of the teeth; to their diseases and to the query of who may, and who may not, with safety, be permitted to treat them, is not at all surprising, in the present state of the dental profession; and more especially, when we reflect that the art of expelling caires from the mouth, and effectually preserving teeth that have suffered even considerable from its ravages, by operation, is, to many, a new thing; that generally, public attention has been directed more to artificial teeth, than to the preservation of the natural ones; and that so far as operations have been submitted to, a great majority of them have been performed by persons too little versed either in the principles or practice of the profession, to ensure success; and that the discrepencies of opinions, views, modes of practice and representations relative to the teeth, held out to patients, by such a discordant, untaught, assuming set of practitioners, should increase the embarrassment, and

totally exclude the possibility of acquring the public confidence for the profession, is as little matter of astonishment.

Yet notwithstanding all this, it is our candid conviction that near one half of the diseases of the teeth may be prevented by early care and proper management; and the greater share of those that are attacked by disease, may be effectually and permanently remedied by judicious and faithful operations: and quite certain it is, that the diseases of the gums and sockets, by which so many sound, well arranged and beautiful teeth are lost, may be prevented, when they do not arise from constitutional derangement, which is seldom the case.

But, in order to secure the above favorable results to community, it is imperiously necessary that the "augean stable" of this profession should be "cleaned;" the profession should be as much protected and fostered, as those of medicine and surgery. Every man, before being permitted to practice it, should serve a requisite term of pupilage, and pass an examination before a competent board of surgeon dentists.

One thing is certain, this profession must either rise or sink. If means are not taken to suppress and discountenance the mal-practices of the multitude of incompetent persons, who are pressing into it, merely for the sake of its emoluments, it must sink;—for the few conpetent and well educated men, who are now upholding it, will abandon a disreputable profession, in a country of enterprise like ours, and turn their attention to some other calling more congenial to the feelings of honorable and enlightened men.

We are happy however, in believing that a great change for the better will, in a few years, take place: for experience is the best tutor, though often a hard one, for it generally brings with it, a corrective.

There are many men of science and eminence engaged in this profession, in our country, and others are entering it with ardor, and though they may not have the effect to "leaven the whole lump," yet they will sustain a redeeming principle, inasmuch as they will triumphantly exhibit the effects of good and sound practice, in contradistinction to that which is worthless; while the good sense of community will affix the seal of merited approbation.

In conclusion, with the most conscientious integrity of purpose, we most respectfully present our little work to the notice of a generous public, and leave it to its candor and liberality to decide on its merits.

Should our humble efforts prove to be of any adequate utility, we will hereafter foster our little volume, by cropping it of redundancies and by adding such farther facts as experience and research may develope, in the hope that it may become the standard *guide to sound teeth.*

In treating our subject we shall be as brief as is consistent with our object; and if we sometimes prove tedious we beg the indulgence of the reader. In order to take off the tedium of a dull subject, occasionally, interesting matter relative to the subject will be introduced in the form of notes.

As we wish no one to take our *ipse dixit* for gospel, we shall use our best endeavors to establish all that we advance on incontestible ground, by argument, fact and quotation. And as all our readers may not be acquainted with the respectability of our authorities, to give them their legitimate influence, we give a list of their names and standing in their professions.

The work is so arranged that the reader may find the information that he may desire under its appropriate head.

LIST OF AUTHORITIES.

John Hunter—The greatest Physiologist, Pathologist, and Surgeon of his age. He wrote a work upon the natural history and diseases of the teeth, comprising 246 quarto pages, illustrated with many engravings.

Thomas Sydenham, born 1624, died 1689. He is universally admitted to have been the greatest physician of his age.

Sir Astley Cooper—The greatest English Surgeon of the present day.

Sir Charles Bell—A very distinguished Scottish Anatomist, Surgeon and Physiologist.

Mr. Lawrence—An eminent Surgeon, residing in London.

M. deBlainville—A learned and popular French Zoologist.

M. Richerand—A distinguished Physiologist, and Professor of the Faculty of Medicine of Paris.

John Mason Good, M. D., F. R. S., F. L. S. &c.—A very learned physician and celebrated medical writer.

J. A. Paris, M. D., F. R. S., F. L. S., Fellow of the Royal College of Physicians of London, &c. &c.

Robert Hooper, M. D., F. L. S., Member of the Royal College of Physicians of London, &c.

Dr. Rush, the great American physician.

DENTAL WRITERS.

Robert Blake, M. D., Author of a celebrated work on "the teeth in man and various animals;" published at Edinburgh, 1799.

Joseph Fox, Member of the Royal College of Surgeons, London; and of the Society of Medicine, Paris; Lecturer on the structure and diseases of the teeth at Guy's Hospital, and Surgeon Dentist Extraordinary to their Royal Highnesses, the Dukes of Kent and Sussex. Mr. Fox wrote a quarto work of 180 pages, illustrated with twenty-three copper-plates, on the natural history and diseases of the teeth. He died a few years ago.

Thomas Bell, F. R. S., F. L. S., Member of the Royal College of Surgeons, London; Lecturer on the anatomy and diseases of the teeth at Guy's Hospital; Author of an excellent work of 330 pages octavo, on the anatomy, physiology and diseases of the teeth.

James Snell, Member of the Royal College of Surgeons, London; Author of "A practical guide to operations on the teeth, &c." 207 pages, octavo.

Leonard Koecker, Doctor in Medicine and Surgery, a German by birth, and now residing in London. Author of Principles and practice of dental surgery, a work containing very many valuable practical observations. Mr. Koecker has travelled much in Europe and America, lived several years at Philadelphia, and has had a good opportunity of observing the practice of dentists in different countries. He is one of the most thorough and effectual dental operators of the present day. We shall have frequent occasion to cite his opinions.

Samuel S. Fitch, M. D., of Philadelphia; Author of a

"System of dental surgery in three parts," 558 pages, octavo.

Mr. L. S. Parmly of London, and Mr. E. Parmly of this city, men, whose reputation in their profession requires no comment from us.

In fine, we shall have occasion to make brief extracts, from the practical observations of many English and French dentists of repute, whose names, it is not necessary to mention in this place.

GUIDE TO SOUND TEETH.

NATURAL HISTORY OF THE TEETH.

It is not our intention to enter into the subject of the natural history of the teeth, farther than we deem barely necessary, in order that the reader may fully understand what we shall have to say on the management of the teeth, for the prevention and treatment of the diseases of these organs.

ANATOMY* AND PHYSIOLOGY OF THE TEETH.

"The teeth," says Mr. Thomas Bell, "may be defined in the human subject, as distinct organs of a bony structure, attached to the maxillary bones, and formed for the purpose of dividing and comminuting the food, preparatory to digestion."

The teeth are the hardest bones of the human system, as is proved by the fact, that in ancient places of sepulture, the

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* Anatomy, (from the Greek, to cut through or up.) "The dissection or dividing of organized substances, to expose the structure, situation and uses of parts."

Physiology, (a discourse on nature.) "That science which has for its object, the knowledge of the phenomena, proper to living bodies."
Hooper's Medical Dictionary.

teeth have often been found in a very perfect state of preservation, while all the other bones have crumbled into dust. A tooth is composed of two substances; the bony part, and the enamel; the former is organized and possessed of vitality, vascularity and sensibility; the latter is crystalline.

The following is the analysis of the human teeth, by the Swedish chemist Berzelius, and is more elaborate than that of any other chemist.

The enamel of the adult teeth contains in 100 parts:—

Phosphate of lime - - - - - -	85.3
Fluate of lime - - - - - - -	3.2
Carbonate of lime - - - - - -	8.
Phosphate of magnesia - - - -	1.5
Soda and muriate of soda - - -	1.
Animal matter and water - - -	1.
	100.

The bone of the adult teeth according to the same celebrated chemist, contains in 100 parts:—

Phosphate of lime - - - - - -	62.
Fluate of lime - - - - - - -	2.
Carbonate of lime - - - - - -	5.5
Phosphate of magnesia - - - -	1.
Soda murate of soda - - - - -	1.5
Gelatine and water - - - - - -	28.
	100.

A tooth is anatomically divided into the crown, neck and fang. The crown is covered by the enamel, which is very thick on their cutting and grinding surfaces, and gradually grows thinner towards the neck, where it almost insensibly terminates. The teeth are articulated with the jaw-bone* in

* "It is curious to observe how differently the teeth are situated in different animals. In the more perfect, they are placed in sockets in the jaw-bones, some of which are in many kinds rendered moveable, as the

a manner peculiar to themselves, which anatomist term gomphosis, (to drive a nail) like a nail in a piece of wood.

Every tooth has an internal cavity somewhat of the shape of the tooth itself, which, gradually diminishes in size towards the end of the fang or fangs, and terminates in a minute foramen or hole. This cavity is filled with a pulpy substance, commonly called the nerve, which is highly vascular and exquisitely sensitive: the nerve and blood-vessels which supply this substance, enter the foramen at the extremity of the root: the roots are surrounded by a periosteum or membrane which secures the teeth in their articulation, and nourishes them by means of the numerous blood-vessels penetrating the fangs: the arteries which supply both jaws and give off minute branches to the teeth, are derived from the *internal maxillary branch* of the *external carotid.*

The nerves of the teeth are derived from the *fifth pair*, which is distributed to the face and head, and is the grand medium of sensation to these parts. *This nerve*, according to

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two fore teeth of the lower jaw of the *mus maritimus*, or African rat, the largest species of the genus hitherto discovered. The same teeth are equally moveable in the kangaroo; and the hollow tusks or poisoning fangs of the rattlesnake, and other venomous serpents, are capable of depression or elevation at the option of the animal. In the lamprey and myxine, the teeth, which are almost innumerable, are placed on the surface of the tongue; in the cancer genus, in the stomach; where we likewise find them in the common earwig. In the cuttle-fish, they are also placed in the middle or lower part of the body, two in number, and horny, and in their figure resemble the bill of a parrot. In the echinus, or sea-hedgehog, they are five in number, arranged around the opening of the under part of the shell, and being moveable by different muscles, they form a very complete organ of mastication. In the *aphrodita aculeata*, or sea-mouse, they are fixed upon the proboscis, four in number, and are consequently extended or retracted with this organ at pleasure. The leech has three pointed cartilaginous teeth, which it is able to employ in the same way, and by means of which it draws blood freely.

The form of the teeth is so different, even in the different genera of animals that possess them in a true or perfect state, that this diversity has been laid hold of by many naturalists, as a distinguishing characteristic of their kinds or orders. Linnæus, confining himself to the fore-teeth, has hereby formed seven distinct orders for the class of mammalia; and M. de Blainville, carrying the basis of this distinction farther than to the form and structure of the fore-teeth, has made it a foundation for the subdivisions of these orders into genera.

Sir Charles Bell, whose theory of the different classes of nerves, and the distinct office to which each is assigned, have ranked him among the first physiologists of the age, is composed of two portions, a sensitive, and a motor portion. The sensitive portion leaves a small ganglion called the *semilunar*, in three great branches; viz. the *ophthalmic*, the *superior maxillary*, and the *inferior maxillary*.

The *ophthalmic* branch is distributed to the eyelids and parts contiguous, to the nose and integuments of the forehead and communicates by inosculating branches, with the *superior maxillary* nerve, and with a portion of the seventh pair or auditory nerve.

The *superior maxillary* nerve possesses a more intimate connexion with our subject, as its branches supply the whole of the teeth of the upper jaw. It is divided into various branches, the names of which, it is not necessary to mention. These branches are distributed to the orbit, temples, nose, cheek, mouth and palate. The *vidian nerve*, one of its branches, is of considerable importance, as it is connected with the *great sympathetic nerve*, by means of its deep seated branch. This intimate connexion with the great medium of sympathy between all the vital organs of the body, cannot but be considered as highly important in accounting for the various sympathies existing between the teeth and other parts, and must not be lost sight of, when we enter upon the effects of the irritation of diseased teeth, gums, and sockets, upon the general system, and the fatal effects of *teething*, in a future part of this work.

The *inferior maxillary nerve*, after giving off some small branches to the neighboring parts, divides into two important nerves, the *gustatory* or the nerve of the sense of taste, and the *inferior maxillary*, which passes in a canal through the lower jaw distributing filaments to the teeth. The *gustatory nerve* has a connexion with a part of the seventh pair, or *auditory nerve*, by means of a communicating branch, and from this connexion, the sympathetic pain in the ear arising from decayed teeth, especially if the wisdom teeth of the lower jaw

be the seat of the disease, is explained; hence also the filing of a saw or any grating noise sets the teeth on edge. The sympathetic pains in the eyes, temples and different part of the face, caused by diseased teeth, are also explained by the intimate connexion existing between the three great branches of the fifth pair.

Nature has given man (and most mammalia,) two sets of teeth; the first, temporary or milk teeth, which are intended to serve during childhood, and the permanent or adult teeth, intended to last from the falling of the temporary ones to the end of life. The reasons of this bountiful provision of nature are obvious, namely, the different size and shape of the jaws, at different ages, and the peculiar formation of the teeth not permitting an increase of growth in them, as in other bones. There are thirty-two adult teeth; sixteen in each jaw; namely, four *incisores*, or front teeth, (from the latin *incidere*, to cut;) two *cuspidati* or eye teeth, (*cuspis*, a spear, spear pointed,) four *bicuspides*, or small double teeth, (from *bis*, twice and *cuspis*, two pointed;) six *molares* or grinders, (*molaris*, a mill-stone.)

The last *molar teeth* in each jaw are called *wisdom teeth*, (dentes sapientiæ,) because we generally get them about eighteen or twenty years of age, or the age of full maturity.

There are twenty temporary teeth, ten in each jaw; four *incisores*, two *cuspidati*, and four *molares*.

It is unnecessary to give a particular description of each tooth, as every one knows more or less of the shape of the teeth from observation.

The *incisores* are somewhat wedge shaped, widest at the cutting edge and gradually diminishing towards the neck; they are slightly concave externally and convex internally, but the concavity is interrupted by a tubercle near the neck. They are situated in the anterior part of the jaws, and form the centre of the *maxillary arch*; each has but one fang. The *central incisores* of the upper jaw are much larger than the *lateral incisores* adjoining them. The *incisores* of the lower jaw are much smaller than those of the upper, and nearly resemble each other in shape.

The *cuspidati* stand next to the *incisores*, and are shaped somewhat like them, though more round, much thicker and the corners cut off: they are the longest and strongest teeth in the head: the *cuspidati* of the upper jaw are much larger than those of the lower, and differently shaped. "The use of the *cuspidati*," says Mr. Hunter, "would seem to be to lay hold of substances, perhaps even living animals." This opinion is probably incorrect, as applied to the teeth of man, for his endowment of reason, and his hands make such a mode of obtaining food unnecessary, while his erect posture,* makes it impracticable. Their office is probably to tear the food too hard for the *incisores* to cut.

The *bicuspides* stand back of the *cuspidati*, and between these teeth and the *molares*; they were formerly called small double teeth, but Mr. Hunter more properly named them *bicuspides*, from the two projecting points.

The external point is longer than the internal, which makes these teeth appear very like the *cuspidati* when viewed laterally: the anterior *bicuspides* are a little smaller than the posterior: those of the upper jaw have two fangs; the lower but one.

The *molares* are placed behind the *bicusipides*, and their shape is very similar in both jaws; the two anterior are much larger than the posterior or wisdom teeth; those of the upper jaw have three fangs, sometimes four, rarely five; one is placed internally and two externally: the wisdom teeth have two fangs; the two anterior *molares* of the lower jaw have two fangs, the one placed anterior and the other posterior; the wisdom teeth have but one.

There is a regular gradation in size, form and use, through the whole series, from the *incisores* to the *molares*. The *cuspiduti* hold a middle place between the *iucisores* and *bicuspi-*

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* Pronaque cum spectent animalia cætera terram;
Os homini sublime dedit: cœlumque tueri
Jussit, & erectos ad sidera tollere vultus.
Ovidii Metamorphoscon, lib. i, fab. II

des, and these latter teeth are in every respect intermediate between the *cuspidati* and the *molares*. The *incisores* are formed for cutting the food, the *cuspidati* for tearing it, the *bicuspides* for tearing and grinding, the *molares* exclusively for grinding it. The *incisores* have but one root nearly round, and the body nearly flat with a cutting edge; the *cuspidati* have also but one root, but it is longer and stronger than that of the *incisores*, the body is longer, rounder and its points conical; the *bicuspides* of the upper jaw have two fangs, separated by a groove, that of the lower but one; the body has two points, and more nearly resembles the *molares*, which complete the masticating surface.

On viewing the teeth of both jaws, in their relative situation, when the mouth is closed, the *incisores* and *cuspidati* of the upper jaw, will be seen to project or rather shut over those of the lower jaw, so as partially to conceal them; also that the external point of the inferior *bicuspides* will strike within the two points of those of the upper jaw.

OF THE FORMATION OF THE TEETH.

The formation of the teeth is a subject interesting to a person fond of natural history; but as a full description would occupy too much space for the limits of this work, we shall merely give a brief outline.

TEMPORARY TEETH.

The rudiments of the temporary teeth can be distinguished very early in a fœtus; as soon as the organization of its parts receive a determinate form.

"In a fœtus of about four months old, the rudiments of the teeth may be very distinctly seen; upon examining those substances found in the jaws, they are seen to be soft, or pulpy bodies, bearing a resemblance to the figure of the body of the tooth to be formed, and each of them is contained in a membrane proper to itself.

"For some time during the formation of the teeth, the alveoli grow much faster than the teeth themselves, which are consequently but loosely contained within them. At the time of birth, the alveolar processes have increased so much, that they almost enclose or cover the teeth; thus a firm support is given to the gums, and the infant is enabled to make considerable pressure in sucking, &c. without injury to the process which is going on underneath.

"The ossification of the teeth begins to take place very early: it is first visible upon the tips of the *incisores*. In a fœtus of about five or six months, ossification has commenced upon the pulps of the *incisores* and *cuspidati*, and on the points of the *molares*, this gradually advances and extends itself, over the pulp, down to the neck of the tooth, from the cutting edges or highest points, where it had first commenced.

"At the time of birth, the bodies of ten teeth are distinctly formed in each jaw; these are the teeth designed to serve during the years of childhood, and are commonly called the temporary, shedding, or milk teeth.

"After birth, as the ossification goes on, the teeth become too long to be contained within the alveolar cavity, they therefore begin to make pressure upon those parts which cover them; this produces the process of absorption, which proceeds with the enlargement of the tooth, first removing the membranes which enveloped the teeth, and afterwards the thick gum which covered them, this gradually becoming thinner and thinner, till at length the teeth are suffered to pass through.

"The following is the order in which the teeth of a child generally appear.—The first teeth are the central *incisores* of the under jaw, one generally coming a few days before the other; then, in the course of a month, the two central *incisores* of the upper jaw. These are succeeded in a few weeks by the lateral *incisores* of the under jaw, and then soon after by the lateral *incisores* of the upper jaw. The *cuspidati* are generally slower in completing their growth than the *molares;* they are placed deeper in the jaw, and therefore are preceeded by the first *molares*. The small *molares* of the under jaw usually

come before those of the upper; they commonly appear about the fourteenth or sixteenth month, and are soon met by those of the upper jaw. After these, the *cuspidati* come through, first in the lower jaw, and then in the upper. At some time between two years and two years and a half, the second *molares* make their appearance, and thus complete the temporary set of teeth."

In general, the first dentition commences about the sixth or seventh month. There is, however, great uncertainty in this respect. Instances are not wanting, where infants have been born with two or more teeth, whilst in many others, they have not made their appearance until as late as one two and even three years.*

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* SPORTS OF NATURE.

SUPERNUMERARY TEETH. It occasionally happens that a temporary tooth, after having given off the rudiment for the permanent one destined to succeed it, gives off a second process which produces a supernumerary tooth. These abortive productions are generally very irregular in their formations and give the mouth a disgusting and unsightly appearance. They are generally the production of the *incisores* of the upper jaw, though they occur in other parts of the mouth.

OF A THIRD SET OF TEETH. "We sometimes though rarely," says John Mason Good, "meet with playful attempts on the part of nature to reproduce TEETH AT A VERY LATE PERIOD OF LIFE, and after the permanent teeth have been lost by accident or natural decay.

"This most commonly takes place between the sixty-third and the eighty-first year, or the interval which fills up the two grand climacteric years of the Greek physiologists; at which period the constitution appears occasionally to make an effort to repair other defects than lost teeth, on which we shall have occasion to treat more at large, when describing that variety of decay, which in the present system is denominated climacteric.

"For the most part, the teeth, in this case, shoot forth irregularly, few in number, and without proper fangs, and even, where fangs are produced, without a renewal of sockets. Hence they are often loose, and frequently more injurious than useful, by interfering with the uniform line of the indurated and callous gums, which, for many years perhaps, had been employed as a substitute for the teeth. A case of this kind is related by Dr. Bisset of Knayton, in which the patient, a female in her ninty-eighth year, cut twelve molar teeth, mostly in the lower jaw, four of which were thrown out soon afterwards, while the rest, at the time of examination, were found more or less loose.

"In one instance, though never more than one, Mr. Hunter witnessed the reproduction of a complete set in both jaws, apparently with a renewal of their sockets. 'From which circumstances,' says he, 'and

The following is Mr. Bell's table of the periods, between which the milk teeth are cut.

From	5 to 8	months,	the four central incisores,
"	7 to 10	"	the four lateral incisores,
"	12 to 16	"	the four anterior molares,
"	14 to 20	"	the four cuspidati,
"	18 to 36	"	the four posterior molares.

another that sometimes happens to women at this age, it should appear that there is some effort in nature to renew the body at that time.'"

"The author of this work once attended a lady in the country, who cut several straggling teeth at the age of seventy-four; and at the same time recovered such an acuteness of vision as to throw away her spectacles, which she had made use of for twenty years, and to be able to read with ease the smallest print of the newspapers. In another case that occurred to him, a lady of seventy-six, mother of the late Henry Hughes, Esq. printer of the Journals of the House of Commons, cut two molares, and at the same time completely recovered her hearing, after having for some years been so deef as to be obliged to feel the clapper of a small hand-bell, which was always kept by her, in order to determine whether it rang or not.

"The German Ephemerides contain numerous examples of the same kind; in some of which, teeth were produced at the advanced age of ninety, a hundred, and even a hundred and twenty. One of the most singular instances on record is that given by Dr. Slade, which occurred to his father; who, at the age of seventy-five reproduced an incisore, lost twenty-five years before; and at seventy-seven reproduced another to supply a similar vacancy, so that at eighty he had hereby a perfect row of teeth in both jaws. At eighty-two they all dropped out successively; two years afterwards they were all successively renewed, so that at eighty-five he had once more an entire set. His hair at the same time changed from a white to a dark hue; and his constitution seemed in some degree more healthy and vigorous. He died suddenly, at the age of ninety-nine or a hundred.

"Sometimes these teeth are reproduced with wonderful rapidity; but, in such cases, with very great pain, from the callosity of the gums, through which they have to force themselves. The Edinburgh Medical Commentaries supply us with an instance of this kind. The individual was in his sixty-first year, and altogether toothless. At this period his gums and jaw-bones became painful, and the pain was at length excruciating. But, within the space of twenty-one days from its commencement, both jaws were furnished with a new set of teeth complete in number.

"The jugglers on the continent, a century or two ago, were in the habit of taking advantage of this occasional playfulness of nature, and offering, as natural phenomena in the formation of teeth, singularities which nature never dreamed of. Thus a boy was at times started and hawked about the country with a golden tooth, much to the astonishment of both the learned and the unlearned: for though the tooth was in reality a natural one, and only covered over with an inlay of gold, yet the gilding

OF THE PERMANENT TEETH.

The formation of the permanent teeth exhibits some of the most curious changes in the animal economy. The permanent teeth are produced from the sacks of the temporary ones by a process which reminds us of gemmiparous reproduction in the lower classes of animal and vegetable life.

The investing sack of the temporary tooth gives off a small process or bud, containing the essential rudiments of the permanent tooth, namely, the pulp, covered by its investing membranes.

"It commences," says Mr. Bell, (i. e. the rudiment of the permanent tooth) "in a small thickening on one side of the parent sack of the temporary tooth, which gradually becomes more and more circumscribed, and at length assumes a distinct form though still connected by a peduncle (stem.) For a time, the new rudiment is contained in the same alveolus with its parent, which is excavated by the absorbents for its reception by a process, as far as I am acquainted unparalelled in the phenomena of physiology; unless indeed the absoption of the roots of the temporary teeth may be considered as analogous. By degrees a small recess is formed by this peculiar process of absorption in the walls of the socket, in which the new rudiment is lodged, and this excavation continues to increase with the increasing size of the rudiment, whilst at the same time, the maxillary bone becomes enlarged, and the temporary tooth, advancing in its formation, rises in its socket, and the new cell

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was in one or two instances so exquisitely effected as to deceive almost every spectator, when the trick was first brought forward, and to lay a foundation for no small number of learned descriptions and profound explanations upon the subject."

I have repeatedly been informed that there is an old lady living at Athens, opposite Hudson, on the North River, who lately cut a partial set of teeth at 83 years of age. I have not had an opportunity to enquire into the truth of this report, though from the respectability of my informants, I doubt not its correctness. Mr. Parmly mentions in his notes to Brown's Deutologia, that he has been repeatedly informed that there is a whole family, residing in South Carolina, who have never cut any teeth, the alveolar processes being so much elongated, as to obviate the deformity that would otherwise have been the consequence.

is thus gradually separated from the old one, both by being itself more and more deeply excavated in the substance of the bone, and also by a deposition of a bony partition between them; thus the rudiment of the permanent tooth is at length shut up in its own proper socket. There is not however, even now a total disunion between the two teeth, for as the temporary one grows and rises in the jaw, the connecting cord or peduncle elongates; and although the sack from which it is derived, by degrees becomes absorbed, it still remains attached to the neck of the temporary tooth,* even long after the latter has pierced the gums; and this connexion between the temporary tooth, the permanent rudiment and the gum, is thus kept up by means of the cord, through a small opening in the top of the new alveolus, which is seen perforating the alveolar process, immediately behind each temporary tooth."

It is impossible to give a correct idea of this curious process of nature without plates. The permanent *incisores* and *cuspidati*, derive their rudimental processes from the same temporary teeth, and are formed above them in the upper jaw, and below them in the lower. The permanent *bicuspides* are formed underneath the temporary *molares*, from which they spring. The second permanent *molares* derive their rudiments from the first, and the third, or wisdom teeth from the second.

The first permanent teeth which begin to be formed, are the *anterior molares*; at the time of birth ossification has commenced on their extreme points; and between six and seven years of age, they generally make their appearance. When a child has cut all its temporary teeth, considerable progress has been made in the ossification of the permanent *incisores*, as well as the first *molares*. Between two and three years of age the child has cut all its temporary teeth; at about six years, the permanent *incisores* and first *molares* are very far advanced in their formation; and if none of the temporary teeth have fallen, there are at this time, no less than forty-eight teeth

* This circumstance is of importance in the management of the second dentition, and will be mentioned under that head.

formed or being formed in the jaws, namely, twenty temporary teeth and twenty-eight permanent ones.

OF THE MANNER OF THE FORMATION OF THE TEETH.

The teeth are formed in a manner peculiar to themselves, differing from the mode observed in the formation of all other bones. The pulp of the crown of a forming tooth is surrounded by two membranes—an internal and an external. The internal membrane secretes the bony structure of the tooth in concentric layers or strata, one within another, first forming a shell of bone, of the shape of the crown. As the ossification goes on, the internal membrane contracts till the whole tooth is formed; it then composes the nerve of the tooth, as it is commonly called; or in other words, it lines the cavity of the tooth, and forms a medium for the ramification of the dental nerves and vessels, which enter the cavity, through the fangs.

As soon as a shell of bone has been formed on the pulp, the external membrane takes on a new action and secretes the enamel upon the bone. The deposition of enamel goes on till the tooth has made such progress as to cause the absorption of the membrane. The enamel, when it is first formed is quite soft; it soon however grows hard and seems to undergo a process similar to crystallization, for it takes a regular and peculiar form. The enamel is composed of a great number of crystalline fibres, which are so arranged as to pass in a direction from the external surface, to the centre of the tooth; by this disposition of its fibres, the enamel acquires a greater degree of strength than could be obtained by any other arrangement. When perfect, the enamel of a tooth is so hard, that in cutting it a file is soon worn smooth, and sparks may be elicited from it with a bit of steel. The enamel is very thick on the grinding surfaces of the teeth and gradually grows thinner towards the gum, where it almost insensibly terminates. It is much thicker on the teeth of some individuals than upon those of others, also more compact. Sometimes it is defective in formation, being of a dirty yellow color and crumbling, or

having spots on its surface. These spots* general are found in rows near the cutting edges of the *incisores* and grinding surfaces of the *molares*, and are caused by irregular or defective action of the membrane which secretes the enamel; and this morbid action is generally caused by some peculiarity of constitution or derangement of the system, at the time of its deposition. Thus, we sometimes find the enamel of the teeth of a whole family defective; and again, the first teeth a child gets, will often be defective, while those that come in three or four years after will have the enamel perfect: we have seen many such examples. The teeth are more highly organized in some individuals than in others; and with this organization, the constitution and state of the general system at the time of their formation, have much to do.

PHYSIOLOGICAL OBSERVATIONS ON THE FOOD OF MAN, DEDUCED FROM THE CHARACTERS OF HIS TEETH.

Physiologists have had much discussion, whether man be a carnivorous, omnivorous, herbivorous, or frugivorous animal, and have deduced their conclusions from the structure and shape of his teeth, by comparing them with those of the different classes of animals, whose teeth are found to be adapted to the particular kind of food on which they live. Thus the *carnivora* have very long canine teeth, fitted for tearing the food in pieces; the *incisores* and *molares* are also well adapted for the same purpose; they have no lateral motion to the jaw and the enamel is confined to the external surface of the teeth.

In the *graminivora*, especially the *ruminantia*, the *incisores* are fitted for cropping the grass, and the *molares* for grinding it, and to render them better adapted for this purpose, their bony structure is intermixed with perpendicular layers of enamel, which, as the bone wears away, make the grinding surfaces very rough. All graminivorous animals have lateral motion to the lower jaw; the reason for this is plain.

* Dental authors give us to understand, that as soon as the internal membrane has formed a shell of the crown of a tooth, that the external takes on a new action and secretes the enamel simultaneously from its whole inner surface. The phenomena occasionally displayed in the formation of the enamel, make it probable almost to a certainty, that it first begins to form, like the bone of the teeth on the points of the grinding surfaces of them, and then proceeds gradually towards the gum.

The teeth of the *omnivora* are fitted for cutting, tearing and grinding.

The teeth of all animals differ much in their shape and structure, and those teeth, for which an animal has the greatest use, are found to be more fully developed. The lion and tiger among the *carnivora* have long and terrible canine teeth. In the *graminivora*, especially the *ruminantia*, as the cow, these teeth are wanting, and the *molares* are the most conspicuous. In the *rodentia*, or gnawing animals, as the beaver, squirrel, &c. the *incisores* are remarkably developed.

In man* every part of the teeth appear equally developed, and exhibit a perfection of structure which may be considered

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* "The teeth of men are distinguished by being all of one length, and by the circumstance of their being arranged in an uniform unbroken series. The cuspidati are a little longer than the others at first; but their sharp points are soon worn down to a level with the rest. In all animals the teeth of different classes differ in size and length, often very considerably; and they are separated by more or less wide intervals: this is particularly the case with the teeth called canine, or cuspidati, which are long, prominent, and distinct from the neighbouring teeth; their not projecting beyond the rest, nor being separated from them by any interval, is, therefore, a very characteristic circumstance in the human structure. Even in the Simiæ, whose masticatory apparatus most nearly resembles that of man, the cuspidati are longer, often very considerably longer, than the other teeth, and there are intervals in the series of each jaw to receive the cuspidati of the other.

"The inferior incisors are perpendicular: the teeth, indeed, and the front of the jaw, are placed in the same vertical line. In animals, these teeth slant backwards, and the jaw slopes backwards directly from the alveoli; so that the full prominent chin, so remarkable a feature in the face of our species, is found in no animal, not even in the Ourang-outang; it appears as if the part were cut off.

"The obtuse tubercles of the grinders are again very peculiar and characteristic; they are worthy of particular remark, because, being the great instruments of dividing the food, they correspond to the kind of nourishment which the animal naturally takes. Their surface does not resemble the flat crowns with rising ridges of intermixed enamel, belonging to our common herbivorous animals; nor are they like the cutting tearing grinders of the carnivora, but they are well adapted to that mixed diet prepared by the arts of cookery, which man has always resorted to when he could get it, and when his natural inclinations have not been thwarted by the interference of religious scruples or prohibitions, nor opposed by his own whims and fancies.

"The lower jaw of man is distinguished by the prominence of the chin, a necessary consequence of the inferior incisores being perpendicular, by its shortness, and by the oblong convexity and obliquity of the condyles.

the *true type*,* from which all others are mere deviations; hence by comparing the teeth of men, with those of other animals, it is impossible to arrive at any conclusion, as to what

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"On the subject of diet a question naturally presents itself; whether man approaches most nearly to the carnivorous or herbivorous tribes in his structure? What kind of food should we assign him, if we judged from his organization merely, and the analogy it presents to that of other mammalia? Physiologists have usually represented that our species hold a middle rank in the masticatory and digestive apparatus, between the flesh eating and the herbivorous animals;—a statement which seems rather to have been deduced from what we have learned by experience on this subject, than to result fairly from an actual comparison of men and animals.

"The molar teeth being the instruments employed in dividing and preparing the food, must exhibit in figure and construction a relation to the nature of the aliment. They rise in the true carnivora, into sharp pointed prominences; and those of the lower shut within those of the upper jaw;—when the series is viewed together, the general outline may be compared to the teeth of a saw. These animals are also furnished with long pointed, and strong cuspidati or canine teeth, which are employed as weapons of offence and defence, and are very serviceable in seizing and lacerating their prey; they constitute in some animals, as the lion, tiger, &c. very formidable weapons. The herbivorous animals are not armed with these terrible canine teeth; their molares have broad flat surfaces, opposed in a vertical line to each other in the jaws. Plates of enamel are intermixed with the bone of the teeth in the latter, and as its superior hardness makes it wear less rapidly than the other textures of the teeth, it appears on the grinding surface in rising ridges, which must greatly increase the triturating effect. In carnivorous animals the enamel is confined altogether to the surface of the teeth.

"The articulation of the lower jaw differs in the two cases as much as the structure of the teeth. In the carnivora, it can only move backwards and forwards, all lateral motion being prevented by the rising edges of the glenoid cavities: in the herbivora it has, moreover, motion from side to side. Thus we observe in the flesh-eaters, teeth calculated only for tearing, subservient, in parts at least, to procuring of food, as well as to purposes of defence; and an articulation of the lower jaw, that precludes all lateral motion. In those which live on vegetables, the form of the teeth and the nature of the joint, are calculated for the lateral or grinding motion. The former, having rudely torn and divided the food, swallow it in masses; while in the latter it undergoes considerable comminution before it is swallowed. The teeth of man have not the slightest resemblance to those of the carniverous animals, except that their enamel is confined to the external surface; he possesses, indeed, teeth called canine, but they do not exceed the level of the others, and are obviously unsuited to the purposes which the corresponding teeth execute in carnivorous animals. The obtuse tubercles of the human molares have not the most remote resemblance to the pointed projections of these teeth in carnivorous animals; they are as clearly distinguished from the flat crowns, with intermixed enamel, of the herbivorous molares. In the free

* Thomas Bell.

class of animals he belongs or did belong when first created. Deprive man of the endowments of reason and make him *frugivorous*, as some would have him to be, he must be confined as are the monkey species, to the tropical regions; but reason, and his propensity to all kinds of food have enabled him to set climate at defiance, and to become the inhabitant of every region.

TEETHING.

The time occupied in the first dentition, is a critical period in the life of a child. The mortality* caused by the local irri-

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dom of lateral motion, however, the human inferior maxilla more nearly resembles that of the herbivora.

"The teeth and jaws of man are in all respects much more similar to those of monkeys, than of any other animals. A skull, apparently of the ourang-outang, in the Museum of the College, has the first set of teeth; the number is the same as in man, and the form so closely similar, that they might easily be mistaken for human. In most other Simiæ the canine teeth are much longer and stronger than in us; and so far these animals have a more carnivorous character. The points and ridges of the molares in Simiæ, are distinguished by their sharpness, from the peculiar obtuse tubercles of the human molares.

"We find, that whether we consider the teeth and jaws, or the immediate instruments of digestion, the human structure closely resembles that of the Simiæ; all of which, in their natural state, are completely herbivorous.

"I do not infer from these circumstances that man is designed by nature to feed on vegetables, or that it would be more advantageous to him to adopt that diet. The hands and the arts of man procure for him the food which carnivorous animals earn by their teeth. The processes of cookery bring what he eats into a very different state from that in which it is employed, either by carnivorous or herbivorous animals. Hence the analogy in the modes of procuring and preparing food is too loose for us to place much confidence in the results of these comparative views. We must trust to experience alone for elucidating the great problem of diet; its decision has been long ago pronounced, and will hardly now be reversed."—LAWRENCE'S LECTURES.

* OPERATION OF THE FIRST DENTITION.

"I have just said above, that the operation of the first dentition was so much the more difficult and attended with more danger, on account of the child being weaker and more nervous. It therefore will not be improper to begin with a statement of the situation, more or less favorable, of children, to enable them to endure the pain which is inseparable from that operation of nature, and to mark out a proper diet and regimen that will procure them a strong constitution. The first rule to be observed is that which is conducive to the enjoyment of a good state of health, which

tation of teething upon the general system is very great, and has been variously estimated by medical writers, from one third, to one half, and even two thirds of those that die under the age of two years. It is therefore proper and important, that every parent should be aware of the danger attendant on

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is the result of a well directed physical education. It is in the country especially, that children strongly constituted are to be met with, who undergo hardly any of the accidents of a painful dentition. This good state of health is owing to the plain diet observed by the mother or the nurse, to the wholesome food she takes, to her rustic habits, in the strict observation of those laws that are prescribed by nature in the use of necessaries, and in abstaining from whatever is proscribed. Her infant being under a similar influence, will, in conformity to two very simple reasons, enjoy a state of health most propitious to resist the infirmities to which nature seems to have condemned it from its birth. Are we desirous of obtaining sound minds? we must begin by framing robust bodies by means of a good physical rearing. What I advance here is no paradox, especially since the Author of "Emile" has so eloquently refuted former prejudices against the masculine education so anxiously recommended by the sages who have written on the first age of life. The results of which I speak were remarkable among the most ancient people, even the most polished, provided they enjoyed a liberal government. The more we imitate the simplicity of nature, the more peaceably will her laws be accomplished, and the more will the improvement of our species be advanced; in short, the nearer physical and moral man will reach a high degree of perfection, the greater will be that quantum of happiness it is in his power to attain. Let parents therefore attend with affectionate solicitude to the physical education of their children. Nature, which is never ungrateful, will repay them for their trouble, and amply remunerate them for having helped her to form men at once useful to themselves, to society, and more capable of enduring and resisting the miseries of human life. Let parents frequently call to their aid the advice of a respectable medical man, and by paying a due regard, give him a place among their best friends. That friend will recommend their giving their children only such wholesome food as may strengthen them, without fatiguing the organs of digestion, which are yet weak; he will not fail to pay more attention to the quality than the quantity, for sobriety is, without contradiction, the parent of health. He will proscribe cakes, all sorts of sugar-plumbs, or too highly seasoned, and heating made dishes; such fruit as is unripe and acid, and which so often deranges the digestion of children. He will advise, in addition, to use no ne but temperate drink, neither too warm nor too cold. He finally will consider as an essential thing, the free use in the open air, of their little limbs, yet in a feeble state. The happy state of health that will result from this regimen will render the parent secure, because the cutting of the teeth will take place sooner, and without occasioning any remarkable irregularity in the organization. The case will be quite different with weak and delicate children born of debilitated parents, or of a weak constitution.—*J. C. Gerbaux, Pensioned Surgeon to the Civil and Military Hospitals of France.*

teething, in order that those remedies, which physicians have found to be most successful in affording relief, may be resorted to in time to avert the fatal consequences that too often follow. This is the more necessary as many parents are much prejudiced against the most efficacious treatment that has been employed, and have some vague and erroneous notions on the subject: we therefore, shall give the opinions of two very eminent medical men, on this interesting subject,—the great John Hunter, and that very talented and learned physician, John Mason Good.

The following is a condensed extract from Dr. Good's Study of Medicine, Vol. I. Diseases affecting the alimentary canal.

"It will readily be supposed that the most violent symptoms of dentition, are those produced by the growth and protrusion of the milk teeth; for the system is then in its tenderest state of infancy, and prone to disorder from very slight causes of irritation.

"The immediate cause of irritation in the present instance, is the pressure of the teeth in the gums; and the degree of irritation depends upon the peculiar temparament of the child. As the teeth push forward, the superincumbent gum wastes away in consequence of absorption, and is at last cut through, and the tooth makes its appearance. This pressure is not, however, uniformly exerted through the whole course of teething, but is divided into distinct periods or stages, by which the vital instinctive principle, which is what we mean by nature, becomes exhausted by a certain extent of action, and then requires rest and a state of intermission. The first active stage of teething is usually about the third or fourth month of infancy; and constitutes what is called *breeding the teeth*, or the production of their bone from their pulpy rudiments, buried in the gum, and formed during fœtal life. The first and most usual symptoms of this change is the looseness with which the infant grasps the nipple, and the frequency with which it lets go its hold, accompanied with fretfulness and crying, and succeeded by a copious discharge of saliva, the salivary glands partaking

of the irritation of the gums. Next the uneasiness of the gums is found to be relieved by the pressure of any substance upon them, which obtunds their sensibility. Hence the child is fond of having its gums rubbed with the finger. If the irritation becomes very considerable, the gums swell, the child grows more fretful, and starts in its sleep; or, on awaking suddenly, there is heat, thirst and other concomitant symptoms of fever, with perhaps dullness and drowsiness; looseness of the bowels is a usual symptom, and a rash appears on the skin; and if the irritation extends to the muscles of the chest, there is a dry and troublesome cough. In about ten days or a fortnight, these symptoms subside; and though the infant may be occasionally teased, with slight paroxysms of uneasiness, it generally passes off, without much inconvenience till the period of the second stage or cutting of the teeth.

"At this time, the gum is often extremely sensible, and instead of being easied by the pressure of any hard substance, cannot endure the slightest touch. At the base, it is florid and distended, but paler at the edge or upper part, and when the tooth is on the point of protrusion, seems covered with a flat and whitish blister. The other symptoms are a repetition of those just described, with a scabby eruption about the lips or head, and sympathetic inflammation behind the ears; in bad cases, there are occasionally spasmodic movements of the mouth and jaws, convulsions and epilepsy.

"The grand point here is to moderate the local irritation; a diarrhœa or a full discharge of saliva does this naturally, and hence these are favorable symptoms: and if the former be too violent, or accompanied with griping, it should be merely corrected by magnesia or prepared chalk. If the bowels be confined we must employ cooling laxatives; and the discharge of a small quantity of blood by lancing the gum freely, will often afford effectual relief. [The lancing of the gum is not the only cause of relief in this case, the membrane which has secreted the enamel often becomes dense and tendonous, and the gum swollen and irritated and both put upon the stretch, by the pro-

truding teeth, and the lance takes off their tension, and often gives instant relief.] If the symptoms of oppression be severe or incubent, as drowsiness, difficulty of breathing, stertor, or irregular motion of the jaws; antimonial emetics and leeches should be had recourse to, and occasionally repeated; after which blistering will be found useful behind the ears or on the back; and when the bowels have been thoroughly evacuated, the use of anodynes may be allowed, and generally prove highly useful, though they should be employed with great judgment, and never trusted to nurses."

"As far as my experience goes, says Mr. Hunter, to cut the gum down to the teeth appears to be the only method of cure, It acts either by taking off the tension upon the gum, arising from the growth of the tooth, or by preventing the ulceration which must otherwise take place.

"It often happens, particularly when the operation is performed early in the disease, that the gum will reunite over the teeth; in which case the same symptoms will be produced, and they must be removed by the same method.

"I have performed the operation above ten times upon the same teeth, where the disease had recurred so often, and every time with the absolute removal of the symptoms.

"A vulgar prejudice prevails against this practice, from an objection, that if the gum is lanced so early as to admit of a reunion, the cicatrized part will be harder than the original gum, and therefore the teeth will find more difficulty in passing, and give more pain. But this is all contrary to facts; for we find that all parts which have been the seat either of wounds or sores, are always more ready to give way to pressure, or any disease which attacks either the part itself or the constitution. Therefore each operation tends to make the passing of the teeth easier."—*Hunter on the Teeth*, p. 240.

Professor John Augustine Smith of this city in cases of difficult dentition, recommends in his lectures, that the gum be cut off at once from the teeth, which will set them at liberty, remove all the symptoms of irritation, and prevent the

possibility of their recurrence, from the cicatization of the gum over them again. In a word lancing the gums in difficult dentition is practiced by all well informed physicians, and should be had recourse to early, in order to prevent the unpleasant and often fatal symptoms that follow.

Almost all infantile diseases are often induced by the irritation of *teething*, as those of the head, bowels, and chest, the disease settling on the weakest part, or the part most predisposed to disease. We will not be surprised at this, when we consider the effects of similar irritation upon the adult—how little will derange his system, when predisposed to disease—the tender age of the infant—the irritability and mobility of its system.

We would offer a few observations on the common practice of giving a child during the first dentition something hard to bite upon, as coral, ivory, or a bit of wood. This custom was recommended by the old physicians, and is still by many on the supposition that such a substance is indicated by the constant desire of the child to put things into its mouth, and that it would facilitate the passage of the teeth through the gum, by the pressure the child exerts upon it, and thus obviate dangerous symptoms. These opinions are founded in error: a hard substance cannot facilitate the passage of the teeth through the gum, unless it hastens its absorption, because, the crown of a tooth is formed first, and as the formation of the fang goes on, the tooth rises in its socket, and no pressure can hasten its progress; nature must have its course. On the contrary, the pressure has a tendency to make the gum callous, or harden it, and thus acturally to impede the protrusion of the teeth, and make dentition more difficult: besides, the child is frequently brusing the gum between the coral and teeth beneath, by accident, causing inflamation. A child during dentition has its finger constantly in its mouth, therefore the finger of the nurse is indicated, or any elastic substance, as a bit of india-rubber.

Dr. Blake says, "coral is a most dangerous weapon put into the hands of children to destroy themselves; for as the teeth rise and become slightly elevated above the edges of the socket, those hard bodies press and bruise the gum between them and the sharp points or edges of the teeth underneath: inflammation and its consequences follow, and in this way I am firmly persuaded the lives of thousands of children have been lost."

SHEDDING OF THE TEMPORARY TEETH AND THE SECOND DENTITION.

The falling out of the temporary teeth, to make way for the permanent set, is called *shedding of the teeth*, and the coming in of the permanent set, *the second dentition*. The necessity for the functions of the teeth commences as soon as the support from the mother ceases; and hence nature prepares a temporary masticatory apparatus, at an early period of life, which occupies but a few months in formation, and is destined to continue only a few years. The temporary teeth also, are proportioned to the size of the mouth: hence the necessity of a second set, of a larger size and of a more substantial structure, to serve during after life.

The shedding of the teeth is one of the most curious operations of nature. As soon as the permanent teeth begin to advance to occupy the place of the temporary ones, their fangs are gradually absorbed* till nothing but the crown remains, when they fall out of the mouth. This circumstance accounts for the vulgar opinion that the temporary teeth have no fangs. If a temporary tooth be extracted while the process of absorp-

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* Absorption, (from *absorbeo*, to suck up;) a function in an animated body, arranged by physiologists under the head of natural actions. It signifies the taking up of substances applied to the mouths of absorbing vessels; thus the nutricious part of the food is absorbed from the intestinal canal by the lacteals, (*lac.* milk, so called because the chyle or fluid they contain looks like milk.)—*Hooper's Med. Dic.*

tion is going on, the fang has the appearance of being broken off, or rather eaten away by insects.

The period at which the shedding of the teeth, or the second dentition commences, is quite various; in some the process begins as early as the fifth or sixth year, and in others, not until the eighth: between the sixth and seventh years, may be taken as the standard time. The first four *permanent molares* usually make their appearance before the temporary teeth begin to fall, and may be considered as an indication of the approaching change.

Soon after the *permanent molares* have made their appearance, the two central temporary *incisores* of the lower jaw begin to loosen and fall out; the permanent central *incisores* soon after appear: in two or three months the central temporary *incisores* of the upper jaw become loose and drop out; and are succeeded by the two permanent ones: in two or three months more, the same changes take place with the lateral *incisores* of both jaws, those of the lower jaws falling first: in about six or twelve months more the temporary *molares* fall, and are succeeded in due time by the permanent *bicuspides:* the temporary *molares* generally fall before the *cuspidati* or eye teeth, the long fangs of which require a longer time to be absorbed: the permanent *incisores* and *cuspidati* take the places of the same temporary teeth; the permanent *bicuspides*, the places of the temporary *molares*; and the permanent *molares*, occupy the space made by the increase of the maxillary bones, after the completion of the first dentition.

The following is Mr. Bell's table of the medium periods, at which the different permanent teeth are cut, but so irregular are they in this respect, that little dependance can be placed in such a statement. The table refers to the teeth of the lower jaw, which commonly precede those of the upper by two or three months.

Anterior molares, - - - - -	6½ years.
Central incisores, - - - - -	7 "

Lateral incisores,	8	years.
Anterior bicuspides,	10	"
Posterior bicuspides,	10	"
Cuspidati,	11—12	"
Second molares,	12—13	"
Third molares, (wisdom teeth)	17—19	"

IRREGULARITIES OF THE TEETH.

There is no part of the management of the teeth more deserving the attention and care of parents, and of those entrusted with the charge of children, than that of irregularities of the teeth; yet no part is so much neglected by them, or is so indifferently practised by the generality of the dental profession.

Irregularities of the teeth are of such frequent occurrence in this country, and so productive of the diseases which invade them and the gums, and are so obnoxious to the person of nice feelings, that we wish especially to draw public attention to this subject. It is next to impossible to keep irregular teeth clean, and free of foreign matter, which lodges in their interstices, and, by its chemical action, destroys the enamel, and causes them to decay. Indeed, such teeth are almost sure to fall into decay, sooner or later; and the irritation of the foreign matter upon the gums is equally sure to engender disease in them also.

We would endeavor to impress more strongly the importance of this subject on the minds of our readers, inasmuch as there is neither necessity or excuse for irregularities of the teeth, unless such be caused by accident; for it is quite in the power of the well-informed dentist to prevent or remove every irregularity, unless it be a sport of nature. And where such assistance is available, the parent who permits his child to grow up with deformed or irregular teeth, is justly chargeable of neglecting a duty to his offspring. It seems surprising that

any parent can be so unmindful of the interest and welfare of his child, as to allow disgusting and hideous deformity to spring up and fix itself permanently and irremediably on that excellent part of its person, which is a peculiar characteristic of man; then to fix itself, too, where it must more or less distort those features which are aptly said to be the index of the mind, and mar that visage which was made after God's own image: besides, there is even associated in our minds an idea of mental perverseness, when there is great deformity of the teeth. Notwithstanding all this, it frequently so falls out, either from ignorance of the means proper to be used for its prevention, or neglect or compassion on the child, or from what you will. Compassion for the child, or distrust entertained by the parent of the efficacy of the means recommended, we have often known prevent the necessary treatment for obviating irregularities of the teeth, and their consequences. But the former is altogether a misplaced sympathy, and the latter an ill-timed discretion, for the exercise of which, the child will not be over-grateful, when he shall have arrived to years of discretion, and to a state of irremediable and perfect deformity.

The permanent teeth are often thrown into a great variety of irregular positions, by several causes obstructing their progress during their irruption.

A description of these irregularities is deemed unnecessary. The *incisores* and *cuspidati* of the upper jaw are most subject to them.

CAUSES OF IRREGULARITIES OF THE TEETH.

The first and most frequent cause is a want of simultaneous action between the protrusion of the permanent teeth, and the absorption of the fangs of the temporary ones.

The second is a narrowness of the *maxillary arch*, or a want of exact proportion between the extent of it and the size of the teeth.

These are the natural and frequent causes of irregularities,

the removal of which, or the obviating of their effects, requires an operator having a minute knowledge of the natural history of the teeth, or of their formation and progress, that he may have an accurate knowledge of the means proper to be applied for their remedy.

There is no department of the dental art in which so much ignorance is betrayed by the generality of operators, as in the management of the second dentition; and none in which a little timely and judicious management will effect so much. We assert this from a sense of duty to our subject, and not from any illiberal feelings entertained towards the members of our profession. On the contrary, we shall be extremely happy on all occasions to extend the hand of fellowship to every worthy member of it.

Most persons think, that all that is required to obviate any irregularity, is the removal of some obstructing temporary teeth; and that this any person can do. But it is a gross error. Many dentists are in the habit of recommending the extraction of the temporary teeth, previous to the irruption of the permanent ones; and parents, indeed, often send their children to their dentist for the above purpose, thinking thereby to prevent irregularity. Nothing can be more empirical on the part of the dentist, or injudicious on the part of the parent, than such a practice—or more contrary to the laws of nature; besides the revolting cruelty of the practice.

REASONS WHY THE ABOVE PRACTICE IS BAD IN THE EXTREME.

First, it is contrary to the laws of nature, upon which we can never infringe with impunity.

Second, there is a connexion existing between the temporary and the permanent teeth, by means of a cord extending from the neck of the former to the sack of the latter (*see page* 26,) which must be torn asunder, if the temporary teeth be extracted, before the sack of the permanent one is absorbed; therefore, the extraction of the temporary teeth would be very

liable to interfere with the healthy and uniform deposition of the enamel; which process is not completed till a short time before the tooth cuts the gum.

Third, the extraction of a temporary tooth before the permanent one has proceeded so far in its formation as in the case above, may prevent the completion of its formation altogether, by destroying or injuring the sack.

Fourth, by the premature removal of the temporary teeth, the jaw is liable to contraction, from want of the accustomed support afforded to it by the teeth and by their sockets (which latter becomes absorbed whenever the teeth are removed;) consequently, when the permanent teeth come in, there will not be room in the jaw for them; and thus irregularity is caused by the very means employed for its prevention. Mr. Bell mentions the case of a fine healthy boy, whose *maxillary arch* was well formed, being taken to a dentist, who, with great dexterity, removed eight teeth at once, all of which were firm in their sockets. The consequence was, that the permanent teeth were ultimately so irregular from want of room from the contraction of the *maxillary arch*, that it became necessary to extract *four permanent bicuspides*, to remedy the pernicious effects of this maltreatment. Thus, in all probability, four permanent teeth were sacrificed at the shrine of ignorance; for Mr. Bell mentions that all the other members of the family had regular teeth, though left entirely to nature.

Fifth, it is a cruel and needless infliction of pain on a child. This notion of having the temporary teeth removed to make way for the permanent ones, is not uncommon. We have repeatedly had children brought to us for this purpose. We trust enough has been said to convince the reader of the justness of our previous observation, that a man should thoroughly understand his profession, who attempts the management of the second dentition. None of the temporary teeth* should ever

* It often happens that the temporary teeth, especially the *molares*, decay at an early age and expose the child to severe tooth-ache. Under such circumstances, it is common to extract the painful teeth. We think

be extracted *haphazzard;* let nature alone, if she is able to perform her intents, for all her operations are perfection, if no casualty makes her deviate from her course: but if any of the causes before enumerated do obstruct the progress of the permanent teeth, it is right and necessary to interfere. Whenever the following circumstances are found to exist at the period of the second dentition, we may with tolerable certainty form a favorable prognosis, as to the ultimate regularity of the teeth.

First, if the parents of the child have regular teeth and have not required the assistance of art to make them so; for this is an indication that the maxillary arch is well developed in the parents, and argues the probability of its being so in the child.

Second, if the temporary teeth stand a little asunder, and especially, if they were originally crowded; as this shows that

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the practice highly improper, as irregularities are often caused thereby; and that the temporary *molar* teeth should never be extracted for tooth-ache, unless it proceed from inflammation, ulceration and the formation of gum biles; in which case, they should be removed for fear of mischief to the permanent teeth, which are being formed underneath them, as well as to rid the child of pain, incurable by other means.

First, reasons have been previously given why the temporary teeth should not be extracted without occasion. (See pages 26 and 41.)

Second, the principal and more important reason is, that if the posterior temporary *molar* teeth be extracted, the first four permanent *molares* which the child usually gets at six or seven years of age, will be very apt to come forward, so as partially to occupy their places: the consequence will be permanent irregularity; for there will not be room anterior to the permanent *molares*, for the permanent teeth springing from the temporary *incisores*, *cuspidati* and *bicuspides*; and as the *incisores* and *bicuspides* come in before the *cuspidati*, the irregularity will be very apt to happen to the latter teeth, to remedy which, will require the sacrifice of the four posterior permanent *bicuspides*.

We universally destroy the nerves of the temporary *molar* teeth for the cure of the tooth-ache, in preference to extraction; and recommend the nurse to keep them stopped with gum mastic, or stop them ourselves with cement. The mastic answers a very good purpose, as it is insoluble in water, though the secretions of the mouth readily act upon it; it may easily be introduced into a hollow tooth after being softened in warm water.

The nerves of the teeth may be destroyed as a general rule, without pain, and without *the least danger*, by means of a very little arsenic, as will be seen under the head "of stopping or plugging the teeth."

Besides the prevention of the consequences before mentioned by the practice we recommend, the child often keeps teeth highly useful for mastication.

there is a disposition in the jaws to expand, to make room for the *increase* of size in the permanent teeth.

Third, if there be no prominence in the gum behind the temporary teeth; indicating that a permanent tooth is about to come through.

In proportion as the above circumstances are found to exist, a more or less regular state of the permanent teeth may be anticipated.

We shall not attempt a minute description of the means to be used to prevent or obviate irregularities of the teeth. Our great object has been to give the reader sufficient information on the subject to convince him of its importance, and to make it plain what course is proper to be pursued.

We would advise the progress of the second dentition to be carefully observed, and if the teeth should be perceived to be coming in irregularly, application for the assistance of a well informed dentist in the case, and the child placed wholly under his management; as it is to be supposed that he knows best what remedies are proper, and his reputation is pledged for the execution of his duty.

In the treatment of irregularities of the teeth, reference should be had to the cause, and efforts made for its removal or to obviate its effects.

When the irregularity is caused by a want of consentaneous action between the formation, or protrusion of the permanent teeth, and the absorption of the fangs of the temporary ones, the latter teeth should then be extracted without delay, when the permanent teeth will easily be brought into their proper position, by the frequent pressing upon them with the finger, or by a silken ligature, in such a manner as to aid them in acquiring a proper dentition.

The earlier means are taken to remedy irregularities of the above kind, the better. Irregularities caused by conformation of the jaws and teeth are much more difficult to treat; and often require the sacrifice of four of the permanent *bicuspid* teeth. The *incisores* or *cuspidati* should never be extracted, if their extraction can be avoided, as on these teeth, the symme-

try and beauty of the mouth depend: it is rarely necessary, unless through gross neglect. As the *incisores* and *bicuspides* make their appearance before the *cuspidati*, these latter teeth are most frequently rendered irregular for want of room. It was formerly the practice to allow these teeth to grow down, and then to extract them; but this was bad practice, as the *cuspidati* are the longest and strongest teeth in the head, and very useful for the support of artificial teeth in the event of the decay and loss of the *incisores*. It is better to extract either the posterior or anterior *bicuspides*, according to circumstances, when the *cuspidati* will soon fall down into their proper places.

To remedy many cases of irregularities, it is necessary to have recourse to gold or silver plates, or other mechanical contrivances. When the front teeth stand too far asunder, from natural conformation, or from too early extraction of the temporary teeth, they may readily be brought into their proper position, by means of silken ligatures frequently renewed so as to exert a gentle but continued pressure.

Irregularities of the teeth are occasionally produced by other causes than those that have been noticed.

Supernumerary teeth—these teeth generally appear behind the *incisores* of the upper jaw and thrust them forward out of their places, and give the mouth a most unseemly appearance. The remedy is the extraction of them, as soon as they pierce the gum.

Teeth are sometimes formed with ragged edges, or corners of them are broken off by accident: these irregularities are remedied by filing off portions from the cutting edges. This operation is not only useful by improving the appearance of such teeth, but is often necessary, for badly formed, projecting, or broken teeth are apt to occasion ulceration of the cheek and tongue; it often happens that very useful teeth are extracted, when the judicious removal of portions of them, would have remedied the evil and preserved them.

In conclusion of this subject, we would observe, that in a future part of this work, "on the prevention and treatment of the diseases of the teeth," we shall have something very im-

portant to say on the effects of crowded and irregular teeth in the production the above diseases, and the means to be used for their prevention.

"The children for whom the assistance of the dentist is most frequently sought, are those who are either in a delicate, or at least an imperfect constitutional health; where the state of not only the temporary teeth, but of the permanent also is to be considered; and where both are found diseased, the future health and regularity of the latter requires the greatest consideration of the surgeon.

"Irregularity of the teeth is one of the chief predisposing causes of their diseases, and never fails even in the most healthy constitution to destroy, sooner or later, the strongest and best set of teeth, unless properly attended to. It is thus not only a most powerful cause of destruction to the health and beauty of the teeth, but also to the regularity and pleasing symmetry of the features of the face; always producing, though slowly and gradually, some irregularity, but not unfrequently the most surprising and disgusting appearance; such as, distortion of the under jaw to one side, a great elongation of that jaw and the chin giving the face that grinning or ludicrous, and sometimes forbidding appearance, which becomes particularly evident and characteristic at some future period of life.

"It is, however, a great pleasure to know that Dental Surgery is abundantly provided with the most sure remedies; and that, in the most delicate subjects, if placed under proper care at an early age, the greater portion of the teeth of the permanent set may invariably be preserved in perfect health and regularity, in common with their relative and contiguous parts."—*Koecker*, p. 180.

"The influence which the teeth exercise over beauty, justifies the pre-eminence which I attribute to them over all the other attractions of the countenance. This ornament is equally attractive in both sexes: it distinguishes the elegant from the

slovenly gentleman, and diffuses amiability over the countenance, by softening the features. But it is more especially to woman that fine teeth are necessary, since it is her destiny first to gratify the eyes before she touches the soul, and captivates and enslaves the heart." (*Dict. Sci. Med. Paris.*)

AN

INAUGURAL DISSERTATION

ON THE

STRUCTURE AND DISEASES

OF

THE TEETH.*

In America, no part of the human system is more subject to disease than the teeth; and the diseases of no part, we believe, are so easily prevented or cured, notwithstanding the contrary opinion generally obtains.

In order to establish what we have asserted in the foregoing pages, viz. that the teeth of most persons may be preserved to

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* *Reasons for re-publishing our Inagurual Essay.* We deem it proper to mention the reasons that have determined us in republishing our inaugural discourse in this work.

First, it is *the ground work* on which to raise our *fabric;* or in other words, it contains the fundamental principles on which the diseases of the teeth must be treated, that success may attend our operations.

Second, it discourses on subjects interesting to professional readers.

Third, many of our patients are anxious to be informed as to the causes of the diseases of the teeth; hence, we infer that many of our readers will be pleased with our arrangement.

Fourth, those who may not have leisure or inclination to read a lengthy discourse, can pas the dissertation by; hence too, we have arranged the whole work with as much system as possible, that the reader may obtain the information desired, under its appropriate head.

We purposely leave out the *exordium;* also, the *concluding observations*, which are embodied in the work.

the end of life, it will be necessary to consider the disputed points in the structure and pathology* of the teeth. First, we will consider whether the teeth are organized and possessed of vitality, vascularity† and sensibility; and secondly, whether caries originate internally, within the bony structure of the crowns of the teeth, from inflammatory action; or externally, from chemical action of foreign matter and corrosive menstrua.

All these points have been, and are still contested. The most eminent physiologists of the last and present century, who have paid any attention to the teeth, deny that their bony structure possesses either *vascularity* or *sensibility:* there are also a great variety of opinions as to the causes and origin of caries of the teeth. It may be proper for us to observe, in this place, that we believe the teeth to be organized, and possessed of vitality, vascularity and sensibility; and subject to the same laws of disease as the other bones of the human system, though modified by the circstance of a greater density in their structure; and hence, that caries originates internally, from inflammation, and externally, from the chemical action of foreign matter: We think we have sufficient data in our possession to establish fully *these positions.*

STRUCTURE OF THE TEETH.

Are the teeth organized and living bodies, *and possessed of vascularity and sensibility?*

Some physiologists have asserted, that the teeth possess none of these attributes, and have considered them as inorganized bodies.

To consider their arguments is unnecessary, since it has long been established that no inorganized body, or a body, destitute of vitality, can compose a part of an organized, living

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* *Pathology*, (a discourse on diseases,) the doctrine of diseases.
† *Vascularity*, (*vas*, a vessel,) vascular, having vessels.

and sensitive system, or remain in contact with the living fibre, without exciting inflammation. Dead teeth and fangs invariably excite inflammatory action, by which, nature endeavors to rid herself of the offending substance; and she performs this process by causing an absorption of the alveoli, and a deposite of ossific matter at the bottom of the sockets, which gradually protrudes and removes the cause of irritation.

The vascularity of the teeth has not been so well established. It is a subject, on which false opinions are generally entertained by medical men; because, it scarcely falls within their province, and has with them, little interest or apparent utility; so that the opinions of Hunter, Bell, and other eminent men, are at once embraced, without a proper examination of their merits. Nevertheless, it is a subject of much importance, in a country, where the diseases of the teeth are of such frequent occurrence as in America; the truth of this assertion, we hope, will appear evident, in the course of this dissertation, for it is certain, that the pathology of these very important organs, must depend upon their organization; therefore, we shall endeavor to establish the vascularity of the teeth, to the satisfaction of the most sceptical.

We will mention the arguments, and assertions of those writers, who advocate the *non-vascular* structure of the teeth; and consider those arguments separately, how far they are tenable, and then adduce facts to refute them.

Mr. Hunter was of opinion that the teeth are not vascular, and gives the following reasons:

First—He could never inject the teeth.

Second—He was not able to trace any vessels, going from the pulp, into the substance of the newly formed tooth.

Third—A want of coincidence of phenomena between the teeth and other bones of an animal, known to be vascular, after having been subjected to the experiment of feeding upon food mixed with madder; for according to his experiments, those parts only, of the teeth formed while the animal is being fed with madder are colored red, while those parts previously

formed remain of their natural white color; and again, teeth once dyed with the madder do not lose the color by absorption, while the other bones are readily colored during, and after their formation, though with the greatest facility, while the animal is young, and this color is again lost by absorption.

Fourth—The teeth, he says, never change by age, and seem never to undergo any alteration, but by abrasion, when completely formed; they do not grow soft like the other bones, in *mollities ossium*.*

"From these experiments," says Mr. Hunter, "it would appear that the teeth are to be considered as extraneous bodies, with respect to a circulation through their substance; but they have most certainly a living principle, by which means they make a part of the body, and are capable of uniting with any part of a living body."—*Hunter's Natural History of the Teeth. Page* 39.

Mr. Charles Bell, who has paid considerable attention to the teeth, comes to this conclusion:

"The phenomena displayed in the formation, adhesion, and diseases of the teeth, show them to be possessed of life, and they have a correspondence or sympathy with the surrounding parts; but we are prepared to acquiesce in the opinion of Mr. Hunter, that they possess vitality, while yet they have no vascular action within them."—*Bell's Anatomy.*

Mr. Lawrence, in a note appended to his translation of Blumenbach's Comparative Anatomy, has the following extraordinary passage.

"The vascularity of the teeth is a doctrine refuted by every circumstance in the formation, structure and diseases of these organs.

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* *Mollities ossium*, (a softness of the bone.) "A disease of the bone, wherein they can be bent without fracturing them, in consequence either of the inordinate absorption of the phosphate of lime, from which their natural solidity is derived, or else of their matter not being duly secreted and deposited in their fabric. In rickets, the bones only yield and become distorted by slow degrees; but in the present disease, they may be at once bent in any direction".—*Hooper's Med. Dic.*

Mons. deBlainville, a learned and popular French Zoologist, terms the teeth, "*la partie mort.*"

The facts and arguments, advanced by the advocates for the *non-vascular structure* of the teeth, at a first view, appear conclusive; but on deeper investigation, this subject appears in a different light. It may be proper for us to observe, that most dental authors are of opinion, that the bony structure of the teeth *is* vascular. In order to place this subject in its true light, it will be necessary to examine the arguments on both sides of the question.

MR. HUNTER'S REASONS FOR DOUBTING THE VASCULARITY OF THE TEETH.

"First," he says, "I never saw them injected in any preparation, nor could I ever succeed in any attempt to inject them, either in young or old subjects; and therefore believe there must have been some fallacy in the cases where they have been said to have been injected. Secondly, we are not able to trace any vessels going from the pulp into the substance of the newly formed teeth; and whatever part of a tooth is formed, it is always completely formed, which is not the case with the other bones."—*Hunter. Page* 37.

This inference is not just, though drawn by so accurate an observer as Mr. Hunter. It is by no means conclusive, that a body is not vascular, because it cannot be injected; as the serous part of the blood may be demonstrated to be circulating, by means of optical glasses, through vessels not perceptible to the naked eye; the bones of young animals are easily made red by injection, which is not the case with the bones of old ones; and as the tendons, ligaments, cartilages and crystalline lens cannot be injected, though believed to be vascular.

"But," continues Mr. Hunter, "what is a more convincing proof, is reasoning from the analogy, between them and other bones, where an animal has been fed with madder. The parts of the teeth already formed, do not become tinged with the dye, while those that are forming while the animal is being

fed with the madder, are dyed red; and this color remains permanent."

Mr. Hunter's experiments with madder indeed, seem a powerful argument in favor of his doctrine, nor have they yet been disproved, though it would appear so from the following extracts:

"Mr. Hunter having observed that the teeth of animals fed with madder, did not become tinged so speedily as other bones; or, when tinged, that they retained their color longer, hence concluded, that they are to be considered as inorganized bodies, with respect to a circulation through their substance."—*Fox. Part* II, *page* 1.

"An incontestable proof of the presence of vessels, both circulatory and absorbent, and consequently of nerves, may be deduced from the progressive growth of the *incisores* in the squirrel tribe, and the coloring of the teeth of all animals, from feeding on food mixed with madder, and the subsequent loss of the acquired color from discontinuing the use of the madder." —*Blake's Essay on the Teeth of Man. Page* 122.

This was merely an inference by Dr. Blake, and was probably deduced from his own experiments with madder, which must have satisfied him that Mr. Hunter's experiments were incorrect; for he says in his work on the teeth, that he was engaged at that time, in the experimental investigation of the subject, and that he intended to make public the result; but I cannot find that he ever put his intentions into execution.

Mr. Hunter's experiments lose much of their force, since he does not inform us how long he continued them; for it may require a longer time to effect these changes, viz. the coloring of the teeth of *old* animals, and the removal of the coloring by absorption from the teeth of *young* ones, fed with madder, than he allowed, on account of the great density of their structure.

The following are the results of my own experiments on rabbits, fed with madder:

First—The teeth of young rabbits are colored red, in three or four weeks after the commencement of their diet.

Second—If the madder be now omitted for ten weeks; at the end of this time, the coloring is absorbed, and the teeth regain their natural white color.

Third—The teeth of old rabbits, fed with madder during four months are considerably tinged with the dye through their whole bony structure.

We do not attach very great importance to these experiments, as it is evident from the structure and formation of the teeth of rabbits, that their growth is continuous as in the squirrel tribe; yet we think they serve to invalidate the experiments of Mr. Hunter, before mentioned.

Again he says, "another circumstance in which the teeth seem different from other bones, and a strong circumstance in favor of their having no circulation within them is, that they never change by age, and seem never to undergo any change but by abrasion; they do not grow soft as other bones do, as we find in some cases when the earthy matter has been taken into the constitution."

That the teeth do not undergo any change when completely formed, but by abrasion, is an assertion not founded on observation.

"It is always observed that as persons advance in life, their teeth lose that whiteness which they possessed in the time of youth. This change in the appearance of the teeth seems to depend upon one which takes place in their cavities, by which the vessels entering them are gradually destroyed, and the supply of blood proportionally diminished. In the teeth of persons advanced in years, the cavity is very frequently obliterated, in consequence of a deposit of bony matter, which entirely destroys the internal organization. When this happens, the teeth always lose their color, and become very yellow, their texture also becomes more brittle, and they acquire a horny transparency."—*Fox' Natural History of the Teeth, Part* II, *page* 24.

If, in general, the teeth do not suffer any change in *mollities ossium* and *rachitis*,* their very dense structure satisfactorily accounts for the fact.

To the above arguments of Mr. Hunter, is added that of exfoliation.† That the teeth do not exfoliate, we conceive not to militate at all against their vascularity, inasmuch as those bones which are the most vascular, exfoliate the most readily, as the bones of the extremities, while those of a more dense structure, exfoliate with more difficulty, as the bones of the skull. Thus, if a portion of the tibia‡ be removed, it will granulate; while a portion of the skull removed by the trephine‖ is never regenerated. That the teeth do not possess sufficient vascularity to render them capable of exfoliation, we think a wise provision of nature; for, had this been the case, the teeth would have been too soft to have performed their proper functions, and would have been more susceptible of inflammation and disease; besides, who would, or could bear the torture, which the tedious process of the exfoliation of the teeth would occasion?

That the teeth possess sufficient vascularity, and have a circulation of the serous part of the blood through their bony structure, we judge from the following circumstances:

First—It is impossible to conceive, that any part of an animal, or a vegetable, can exist and possess life, without a nutrient circulating fluid to sustain that principle.

Second—The anatomy of the teeth themselves. The fangs of the teeth are surrounded and held in their sockets by a periosteum,§ and as the periosteum of other bones transmits

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* Rickets.

† Exfoliation, (from *exfoliare*, to cast the leaf.) The process by which nature separates dead bone from the living, and supplies its place by a new ossific formation.

‡ Tibia. The shin bone or the largest bone of the leg.

‖ Trephine. An instrument by which surgeons cut out round pieces of the skull, for the relief of compression of the brain.

§ Periosteum, (about a bone.) The membrane which surrounds the

arterics and nerves to their substance, so, probably, does the periosteum of the teeth transmit minute arteries and nerves to their fangs, for the preservation of their vitality. This is the more probable, as the vitality of the fangs does not depend upon the internal membranc, as we shall shortly prove. Every tooth has an internal cavity in some respects, of the shape of the tooth itself, lined with its proper membrane, to which an artery and a nerve are transmitted, forming, together with the veins, absorbents and cellular substance, the pulp or internal membrane of the tooth, which adheres firmly to the walls of the cavity. Its blood-vessels are numerous, and large enough for the circulation of the red particles of the blood; for in cutting off the crown of a carious tooth, the pulp of which is living, a small quantity of blood is usually discharged; also, in removing the carious and dead portions of teeth, much decayed, for the purpose of plugging, the part near their internal membranc, will often appear reddish, from the blood-vessels of this membrane, shining through the thin layer of bone. If an aching tooth be extracted and split asunder, the pulp will always appear red and inflamed, and the vessels so large, that they can be distinctly seen, ramifying through the whole pulp.

"A large quantity of blood is distributed to the teeth; blood carries with it the principle of nutrition, and is sent only to those parts where renovation is necessary; for what other reason then, but to impart some principle of nutrition, can so much blood be sent to the teeth."—*Fox on the Teeth. Part* II, *page* 34.

"The phenomena," says Mr. Charles Bell, "displayed in the formation, adhesion, and diseases of the teeth, show them to be possessed of life, and they have a correspondence or sympathy with the surrounding parts. But we are prepared

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external surface of all the bones except the crowns of the teeth, and serves as a medium for the distribution of blood vessels to them, as well for the attachment of the muscles, tendons, &c.

to acquiesce in the opinion of Mr. Hunter, that the teeth possess vitality, while yet they have no vascular action within them. We naturally ask, how can such vitality exist, independently of a circulation? But there are not wanting examples of an obscure and low degree of life existing in animals, ova and seeds, for seasons, and if for seasons, why not for a term of years?"

That there are animals existing without a circulation, is an assertion altogether gratuitous. As for ova and seeds, we can percieve no analogy, for in them life is dormant, and remains in this state, till its proper stimuli call it into action, and if it now be stopped, it is destroyed forever.

There may be animals existing for a season, without a circulation, as the frog, when frozen up in winter; but this is a different thing; life, in this instance also, is dormant, and remains in this state, till the genial warmth of spring recalls it into action; this however, has not the least analogy, as applied by Mr. Bell. A neutrient circulating fluid is the grand distinguishing mark, between the animal, vegetable and mineral kingdoms; as nothing can have life without this vital agent, and when it ceases, the animal or vegetable returns to its native elements.

With due defference to the opinion of Mr. Bell, we do not believe, that the use of the internal membrane, is altogether to give to the tooth a sufficient degree of vitality, to prevent its acting as a foreign body, or that it is a means of fixing the tooth in its socket, for the healthy fang does not act as a foreign body; but we believe that nature intends it to nourish the tooth, as well as to give it vitality and sensibility; and that for this purpose, it sends arterious and nervous fibres through its whole bony structure. That the internal membrane is not altogether intended to prevent the fang from acting as a foreign body in its sockets by giving it vitality, is proved by these facts:

First—When the carious crown of a tooth has been cut off, and the perfectly healthy fang protected by a proper artificial

tooth from the action of external agents, this fang does not act as a foreign body, but will frequently last ten, twenty, or thirty years, and even more.

Second—When caries has extended to the pulp of a tooth, if it be destroyed, and the tooth securely plugged, it will often remain firm and healthy in its socket for many years, provided it be a tooth favorable to be operated on, the fangs healthy, and its periosteum not inflamed. Of the truth of this, we have abundant testimony.

Third—The cavity in the teeth of old persons, is frequently obliterated by a deposite of ossific matter, and this is always the case when they are very much worn down; yet these teeth, although their internal organization is destroyed, do not act as foreign bodies.

Fourth—On the contrary, in the diseases of the gum and sockets, when the teeth are protruding and hang loose by the end of the fangs, the internal membrane is frequently as healthy and sensitive as ever.

It is said by all writers on the teeth, that whenever the internal membrane of a tooth is destroyed, the vitality of that tooth is also destroyed, and that it is a foreign and extraneous body in its socket; but we apprehend the preceding facts prove this idea to be a mistaken notion; and that the fangs themselves possess a sufficiency of the vital principle, to prevent them from acting as foreign bodies, as long as their periosteum remains healthy. The vascular periosteum is firmly attached to the fangs, either by sanguiferous or other fibres; and when inflammation has disorganized this connexion, *then*, and not till *then*, such teeth or fangs become foreign and extraneous bodies.*

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* This pathological fact, though it may be looked upon as trivial, is, nevertheless of much importance in the judicious practice of dental surgery, as it is evident that the dentist must be governed in his operations, by his views of the organization and structure of the teeth. Mr. Fox thought of curing aching teeth (the pain arising from the nerve) by dislocation, so as to rupture the nerve and blood-vessels entering the fangs;

Hence it appears that the use of the internal membrane, is designed for some other purpose, than that supposed by Mr. Charles Bell; and as the Great Architect of the Universe has made nothing without some purpose, it follows that the design of the internal membrane must be to nourish the tooth as well as preserve its vitality. If this were not the design, it is certain that it would have been better, if the teeth had been destitute of this membrane altogether, which is questioning Omniscience. This being granted, how can it be effected, unless arterious and nervous fibres, penetrate through the whole bony structure of the teeth?

The sensibility of the teeth, is also a sound argument in favor of their vascularity: of the sensibility of the teeth, every one must be convinced; many persons experience pain in having the carious and dead portions of their teeth exfoliated, far from the internal membrane, and the nearer we approach this membrane, the more acute is the pain.

"It often happens that in consequence of the use of mercury, or from dyspeptic affections, the gum and the edge of the alveolar process recede from the neck of the tooth, which thus

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but he soon found his patients returning with inflammation in the sockets of such teeth, which he supposed was owing to their having become foreign and extraneous bodies, from the destruction of the internal membrane. But it was rather owing to the disorganization of the periosteum —the total destruction of vascular and vital connexion between the periosteum and the fangs.

Had Mr. Fox destroyed the internal membrane, without injuring the periosteum, and securely plugged these teeth, he would have preserved most of them for many years.

One dentist pulls out his patient's front teeth or fangs, and substitutes artificial teeth on plates, and thus gives him much pain and inconvenience, and endangers the premature loss of the adjoining teeth. Another cuts off the stumps of the same teeth even with the gum, and splices on to them the crowns of other teeth, with little pain to his patient, which are as convenient and nearly as useful as the original teeth; and the stumps thus protected, will last for many years. Indeed, the former and wretched practice is, at this time pursued by very respectable dentists in this country. Again a person who has been so unfortunate as to lose most of his teeth, goes to one dentist who pulls out his aching tooth, while another would easily have destroyed the pulp, plugged it, and thus preserved a highly useful tooth.

becomes exposed, and if this part be then touched with the point of any instrument, pain is immediately produced, which is always increased when the part is inflamed."—*Thomas Bell on the Teeth. Page* 13.

Sometimes teeth affected with the denuding process, or some species of caries, are exquisitely sensitive; and it is remarkable that as the diseased parts are removed with instruments, the pain diminishes as we reach the sound bone. These facts we conceive, prove that nervous fibres must traverse every part of the bony structure of the teeth; and that their extremities, bordering on the diseased parts, are inflamed or morbidly sensitive: and that the pain cannot arise directly from the internal membrane, from sympathy or concussion as supposed by Richerand and some other physiologists. This is the more probable, as it is impossible to conceive that a part of our system, to which no nerves are distributed, (if there be such parts) can communicate to the sensorium the sensation of pain. This hypothesis can certainly require no further refutation. This being granted, it is repugnant to sound reasoning to suppose that vascular fibres do not also accompany the nervous filaments.

Again, after a tooth has been plugged, the patient usually experiences some pain when he takes any thing hot or cold into his mouth, for two or three weeks after the operation, on account of the metal being a better conductor of caloric than bone is; the nerve at length becomes accustomed to the sudden transition of temperature, and no further inconvenience is experienced. May not this phenomenon be rather owing to some change in the organization of those parts of the teeth, surrounding the plug? and is it not probable, that this change is a recession of the arterious or nervous fibres, and deposition of ossific matter in their minute canals?

Finally, the phenomena displayed in the diseases of the teeth, are powerful and conclusive arguments in favor of their vascularity; for we shall hereafter show that the constitutional formation of the teeth, climate, great and sudden changes of

temperature, manner of living, and diseases of the general system, have a great effect in inducing the diseases of the teeth, as we have an abundance of facts to prove: these certainly can have no such effect, every medical philosopher will assert, unless the teeth are susceptible of inflammation, which cannot be unless they are vascular.

So much for arguments and facts combined. We apprehend that the following facts will satisfy any man that the bony structure of the teeth is vascular.

In the spasmodic cholera the teeth are said to be frequently injected with the red particles of the blood, particularly by the French physicians: our own observations will not permit us to bear testimony in favor of this assertion, though we do not doubt but that it does happen.

"I have at this time five teeth taken from the jaws of a very plethoric woman, who died of a violent inflammatory fever, which appear completely and beautifully injected with red blood."—*Fitch on the Teeth. Page* 135.

"I have frequently examined the teeth of persons, whose death had been caused by hanging or drowning, and have invariably found the teeth of a dull deep red, which could not possibly be the case if these structures were devoid of a vascular system."—*Thomas Bell on the Teeth. Page* 12.

Dr. J. R. Spooner of Montreal, has had several opportunities of examining the teeth of persons who have died on the gallows, and has invariably found the phenomena mentioned by Mr. Bell.

We have in our possession several teeth taken from the jaws of a man who was hanged, the whole bony structure of which is red with blood.

Many more arguments and facts might be adduced in proof of the vascular structure of the teeth; but we trust enough have been advanced to establish it fully. We have even dwelt longer on this subject than may be thought necessary; if so, a desire to establish our position beyond a doubt, is some apology; for if our views be incorrect our practice must also be

incorrect, as to the judicious treatment of the diseases of the teeth must depend upon the structure and pathology of these organs.

A great variety of opinions have been and are still entertained, whith respect to the origin of decay of the teeth. Some of these opinions have arisen from the views of their authors, on the subject we have been discussing; others from no views at all, but rather from hypothesis.

The treatment of the diseases of the teeth is equally various, and for the same reasons; for, as before observed, one practitioner pulls out his patient's stumps of teeth, and substitutes the crowns of other teeth on plates; another files off these stumps even with the gum, and splices on to them the crowns of other teeth; the one saves all the teeth he can, the other extracts indiscriminately all that are painful. One dentist files asunder those teeth that are crowded together and begin to exhibit symptoms of decay, another condemns the practice as injurious. One man plugs a tooth without half removing the decay, another knows that if he does not perfectly extirpate it, he does not cure the disease; in a word, the whole treatment of dental decay, both preventive and curative, and indeed, of all the diseases incidental to the teeth, must be founded on the subject we have been discussing, if much utility can be derived or expected.

DISEASES OF THE TEETH.

1st.—Caries.—Two species. 1st, internal 2nd, external.
2nd.—Odontitis.
3rd.—Periostitis.
4th.—Exostosis.
5th.—Necrosis.
6th.—Denuding Process of Hunter.
7th.—Abrasion.

Of these diseases caries, or as Mr. Thomas Bell terms it, gangrene of the teeth is the principal; and as it is a disease of very frequent occurrence in our country, we shall examine it thoroughly.

Caries has been divided by writers upon the teeth, into superficial, when the disease first makes its appearance on the outside of a tooth—deep-seated, when it has extended to the internal bony structure of a tooth—simple, when the disease has not reached the internal membrane—complicated, when it has extended to this membrane—and into internal and external caries. There can be no utility in this arrangement for our purpose, as it is a sub-division of the same disease. There are also, several species of caries, but as they originate from the same causes, and require the same treatment, it would be foreign and surperfluous to treat of them separately; there-

fore, we prefer the division into internal and external caries, as more useful, and founded on the anatomy of the teeth, and as we believe, on the true pathology of this disease.

Various opinions have been entertained, as to the origin and causes of caries, from the time of Mr. Hunter down to the present day; and we beg leave to present some of the opinions of the most celebrated writers upon the teeth, in their own words. Mr. Hunter says:

"The most common disease to which the teeth are exposed, is such a decay as would appear to deserve the name of mortification. But there is something more; for the simple death of the part would produce but little effect, as we find the teeth are not subject to putrefaction after death; and therefore I am apt to suspect that, during life there is some operation going on which produces a change in the diseased parts.

"It does not arise from external injury, or from menstrua, that have the power of decomposing part of the teeth; for any thing of that kind could not act so partially. We may reasonably suppose that it is a disease arising originally in the tooth itself."—*Hunter's Natural History of the Teeth. Pages* 135, 141.

Mr. Fox thus gives us his opinion:

"The causes of caries have not been satisfactorily explained, from the structure of the teeth not having been duly considered. Mr. Hunter says:—'It does not arise from external injury, or from menstrua, which have a power of dissolving part of a tooth; but we may reasonably suppose that it is a disease arising originally in the tooth itself.' It is surprising that, although Mr. Hunter went thus far, he gave no correct idea of the manner in which the disease can alone originate.

"The proximate cause of caries appears to be an inflammation in the bone of the crown of the tooth, which, on account of its peculiar structure, terminates in mortification.

"The membrane which is contained within the cavity of a tooth is very vascular, and possesses a high degree of nervous sensibility; an inflammation of this membrane is liable to

be occasioned by any excitement which produces irregular action; and as the bone of the tooth is very dense, and possesses little living power, a death of some part of it may speedily follow an inflammation of the vessels of the membrane which are contained within the cavity.

"If a sound tooth that has been recently extracted be broken, the membrane will be found to be firmly attached to the bone of the tooth, forming the inner cavity. But when this membrane becomes inflamed, it separates from the bone, and the death of the tooth is the consequence.

"That this is the proximate cause of caries, appears to be highly probable by remarking that a caries of other bones is caused by a separation of those membranes which cover them, and which are attached to them. Thus a separation of the *periosteum* will cause a death of a part of the tibia, or that of the *pericranium*, a caries of some part of the bones of the head.

"This opinion is also confirmed by comparing the symptoms which accompany inflammation in a bone with those which are occasionally felt by persons in their teeth, previously to any appearance of caries.

"During the inflammation of a bone, there is an obtuse, rather than an acute pain; the parts which surround or cover it feel sore, and cannot bear pressure; and when there is an opportunity of making the comparison, an inflamed bone is found to have a darker appearance than a healthy one.

"Very similar to these are the symptoms which are observed by every one when their teeth have been affected by what is commonly termed a cold. At this time a dull, uneasy pain is felt extending along the jaw, the teeth are tender, and cannot be pressed together with the ordinary degree of force; and it may almost always be observed, that the teeth thus affected, have a darker appearance than those which are perfectly free from pain.

"When these inflammatory symptoms subside, the pain in the teeth goes off; but, as inflammation may have caused a death of some part of one or more teeth, the decomposition of

the internal part of the tooth goes on, until the enamel is broken away, and a caries is discovered.

"I could mention many cases in corroboration of this statement, and produce several examples of teeth with the decay extending through the internal part, whilst the enamel remained perfectly sound."—*Fox's Natural History of the Teeth. Part* II, *page* 11.

Mr. Thomas Bell, who has written the best work upon the teeth observes:

"It is I believe, only by recurring to the vitality of the teeth, modified as it certainly is by the peculiarities of their structure, that we can arrive at the true explanation of the nature, the cause and the progress of dental gangrene. Mr. Fox, apparently from his well intended, but overweening fondness for discovering in the diseases of the teeth a perfect analogy with those of other bones, was led to form incorrect notions on this subject, though it is to him that we are indebted for the actual discovery of the cause of this disease. He says, 'when the membrane becomes inflamed, it separates from the bone, and the death of the tooth is the consequence. That this is the proximate cause of caries,' he continues, 'appears to be highly probable, by remarking that a caries of other bones is caused by a separation of those membranes which cover them, and which are attached to them. Thus a separation of the *periosteum* will cause a death of part of the *tibia;* or that of the *pericranium*,* a caries of some bones of the head.' Exclusive of the circumstance that caries is, in this passage confounded with necrosis, it contains in every respect, a false view of the question. It is extraordinary that this author, arriving as he did at so near an approximation to the true cause of the disease, should have at once confounded not only caries with gangrene, but partial gangrene with the total death of the tooth. If inflammation go on to such an extent as to

* Pericranium, the membrane which invests the external surface of the skull.

occasion the separation of the membrane—the loss of the medium of organic communication between the tooth and the general system—the whole tooth loses its vitality at once, and becomes an extraneous body in the socket; under which circumstances, it indeed gradually assumes a darkened color, but without any of those appearances which characterize the disease in question.

"Still however, the true proximate cause of dental gangrene is inflammation; and the following appears to me to be the manner in which it takes place: when from cold or from any other cause, a tooth becomes inflamed, the part which suffers the most severely is unable, from its possessing comparatively but a small degree of vital power, to recover from the effects of inflammation, and mortification of that part is the consequence. That the bony structure of the teeth is *liable* to inflammation, appears not only from the identity of the symptoms which take place in them when exposed to causes likely to produce it, with those which are observed in the other bones when inflamed, but more conclusively still from the fact already mentioned, that teeth are occasionally found, in which distinct patches, injected with red particles of blood, have been produced by this cause, after the continuance of severe pain. A tooth which has been the subject of inflammation, will often remain without any diseased appearance for weeks or months afterwards; but at length the consequence which I have described becomes obvious, by the occurrence of a darkened spot which shows itself through the enamel; and the gradual destruction of the tooth follows, if means be not taken to arrest its progress."

Mr. Bell goes on, and gives as his opinion, that caries of the teeth, is always produced by inflammation; and that it invariably commences immediately under the enamel; which he argues is the more probable, as this part of a tooth is furthest from the internal membrane, and in consequence of it possessing less vitality, has less power of resisting inflammatory action.

The causes of caries, he devides into predisposing, remote

and exciting. By *predisposing causes*, he means all those circumstances, which may affect the structure of the teeth, during their formation. By *remote*, those things which may produce a subsequent change in their condition; as the administration of certain medicines; and by *exciting causes*, those things which directly act on the teeth; as cold, great and sudden changes of temperature, foreign matter, &c. It is seen, that the views of Mr. Bell are materially different from those of Mr. Fox, on this subject; the latter gentleman divides caries into internal and external, and supposes that internal caries is produced, by an inflammation of the internal membrane, which occasions it to separate from the walls of the cavity, and that the death of some portion of the bone of the tooth is the consequence. This hypothesis can certainly require no refutation; the internal membrane is never separated from the walls of the cavity, unless suppuration has taken place, no matter how much the tooth may be decayed, as any one may satisfy himself, by examining the internel membrane of a tooth, recently extracted, which will be found to adhere with some firmness. External caries, Mr. Fox attributes to the action of foreign matter and corrosive menstrua, which destroy the enamel and expose the bone of the teeth to decay.

Mr. L. S. Parmly and others, deny that caries ever originates internally, from inflammation, and declare that it is produced in all cases, by the action of foreign matter, corrosive menstrua, and the putrefactive fermentation of the particles of food, lodged between the teeth.

Mr. E. Parmly, of this city, is of the above opinion. He says:

"I consider the immediate and exciting cause of dental decay to be always external to the tooth itself, and to consist of certain corrosive menstrua to which these organs are exposed from bodily disease, improper aliments, powerful medicines, and the thousand other sources of acrid filth and destructive poisons that become concentrated in the mouth and deposited upon the teeth. These procuring causes of caries may indeed

derive their origin from constitutional diseases acting upon the system at various periods of life, but whatever internal defect of structure a tooth may derive from original organization, how much soever it may be predisposed to take a diseased action under favorable conditions, still, the tooth never decays till exteranlly affected by putrescent, or corrosive, or disorganizing matter, which breaks up its structure."—*Notes on Brown's Dentologia. Page* 135.

Dr. Fitch, of Philadelphia, who published a large work upon the teeth, a few years ago, is of opinion, that caries commences on the outside of the teeth. He observes:

"I can easily conceive of causes acting upon the teeth externally, to produce their decay—of constitutional and local causes, which affect their living powers and organization internally. But to conceive of a latent cause which acts upon the substance of the bone of the tooth, without relation either to its nerve or blood-vessels, or its lining membrane on the inside, or to any deleterious influence on the outside, is a stretch of conception which I can hardly form; still I will not deny but that it may be. If so, why are not the fangs as often affected as the crowns of the teeth? The only answer I can make is, that those who advocate the first idea as a common principle, have either mistaken themselves in their statements, or they have mistaken this subject in its true pathology."—*Fitch on the Teeth. Page* 148.

By all this ambiguity, Dr. Fitch evidently means that he cannot conceive, how caries can originate internally, from inflammation of the bone of the teeth, although he is a strenuous advocate for the vascularity and sensibility of the teeth, and contends that the proximate cause of caries, is inflammation of their bony structure, and avers the predisposing causes of caries.—*See Fitch on the Teeth. Page* 143 *to* 160.

That the fangs are not liable to decay is explained by the the circumstance of their being protected in their situation, by their structure and periosteum.

"Numerous causes have been assigned, as the origin of

decay in the teeth, such as scurvy, heat of stomach, heat of the mouth, nervous fever, acidity of the saliva, &c., none of which appear sufficient to account for caries.

"From a careful attention to circumstances, caries will be found not to be so much the effect of chance as is generally imagined; it appears almost universally, to be an original mischief implanted during the formation of the teeth."—*Fuller on the Teeth. Page* 48. *London*, 1815.

"Heat, to a certain degree, is highly detrimental to the teeth; hence we find that those animals, which live chiefly on hot food, are most subject to caries of the teeth. Increased circulation in the gums, whether the effect of mercury or general fever of the system, is also very injurious to teeth, and hence caries of the teeth are a common consequence of salivation and inflammatory fever."—*Familiar Dissertation on the Causes and Treatment of the Diseases of the Teeth. By J. P. Hertz. London*, 1815.

Mr. Murphy thus gives us his opinion on this subject:

"No medicine has yet been discovered, which will prevent caries of the teeth, or which will effectually operate as a cure nor is the cause from which it originates positively ascertained."—*Natural History of the Teeth, &c. Page* 76. *London*, 1811.

Mr. Bew thus advances his ideas as a new and very important discovery:

"In offering this portion of my opinion on the maladies incidental to the teeth, I am well aware that I am rending the veil from a treatment that I have long contemplated in theory, and reduced to practice with the happiest success during many years; I tread on ground untrodden before, and open a wide field for the contemplation of the philosopher in the anatomy and pathology of these organs of mastication.

"To those who casually glance at the teeth primary and permanent, with healthy gums, fitly arranged in their several sockets for the purpose of mastication, aided by the conviction of sight and feeling, that they are the hardest substances in

our system; how inexplicable and irreconcilable to credibility, must it appear that these *very hard* substances, with their *flinty coatings* date their destruction from completion by *lateral pressure* against each other."—*Opinion's on the Causes and Effects of Diseases in the Teeth and Gums. By Charles Bew. London*, 1819.

Mr. Wooffendale, speaking of the *imperfect appearances* of the teeth, (defective enamel) advances the following ridiculous idea:

"I have been at some pains, (and I believe my endeavors have not been in vain,) to ascertain a cause for these imperfect appearances in the teeth.

"I have frequently seen these marks, both on the first and second sets of teeth, which cause me to supect, that such children have had the small-pox twice."—*Observations on the Teeth.* 1800.

M. Gerbeaux, of Paris, remarks:

"People who inhabit cold, moist, and marshy countries, have rarely good teeth.

"It ought perhaps to be remarked, that diseased teeth, among many individuals, originate in organic disposition, which may be transmitted hereditarily from parents to their children."—*Observations on the most frequent Diseases incidental to the Mouth. Page* 14.

M. De Chemant acknowledges his ignorance of the causes of caries, in these words:

"Unfortunately all the researches that have been made on this subject, have hitherto remained fruitless, because, in the present state of our knowledge, we cannot foresee the disorganization of the teeth.—*Advice to Mothers and Nurses, &c. Page* 5.

The Chevalier Ruspini attributes caries to several causes:

"Various are the species of caries; almost every part of the teeth is affected by it, and both internal and external causes produce it.

"The caries that proceeds from internal causes, namely,

the scurvy, &c., generally affects the roots of the teeth, often the internal surface; sometimes the external, and even the inward cavity of the body."—*Treatise on the Teeth, by Barth. Ruspini. Page* 55. *London.*

Most of the above quotations, except that from Mr. Hunter, (whose mighty genius did not permit him to think the teeth beneath his notice, nor to neglect to set us an example, in this respect, worthy of imitation by the medical fraternity; but which has been sadly neglected by it,) are from the pens of very eminent surgeon dentists; men of finished education and scientific acquirements: we might carry them much farther; but these are enough to show, that the opinions as to causes of caries are various; and that many of these opinions have been hazarded, without a proper consideration of the physiology and pathology of the teeth, the only sure guides to the ætiology* of any disease.

It is indeed surprising, that such opposite opinions should be entertained by scientific men, as to the causes of a disease, which appears to us to be as easy of demonstration, as any problem in Euclid.

If the vascularity of the teeth be admitted, of the certainty of which, we believe no one can doubt, after what has been said on the subject, the problem is at once solved.

First—The theory of the origin of internal caries, advanced by Mr. Fox, (namely, inflammation of the bony structure of the teeth,) as modified by Thomas Bell, satisfactorily accounts for all the phenomena of internal caries.

Secondly—The theory of the *causes* of external caries, (the chemical action of foreign matter and corrosive menstrua,) also, first advanced by Mr. Fox, afterwards embraced, as the exclusive cause of both species of decay, by Mr. L. S. Parmly, satisfactorily explains the phenomena of external caries.

In order to establish these positions, it will be necessary to

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* Ætiology. The causes of disease, the *doctrine* of the causes of disease.

examine the pathology of the teeth, and the ætiology and phenomena of caries.

First—Is the peculiar structure of the teeth susceptible of inflammation?

Second—If it is, what will be the probable result of that inflammation?

The two following laws in pathology (see Hunter on the blood) most admirably illustrate the origin of internal caries, by showing that the teeth are liable to inflammation,* and that this inflamination will be extremely apt to terminate in mortification, on account of the low degree of vitality, which they possess.

First law—Those parts of the human body, which are the most vascular, and possess the greatest degree of vitality, are the most susceptible of inflammation, and when attacked by inflammation bear it best.

Second law—Those parts which are the least vascular, and possess the least vitality, are the least susceptible of inflammation, but when attacked by it, bear it worst.

That the teeth are liable to inflammation, is made probable by comparing the symptoms of inflammation in the other bones, with those which many persons experience in their teeth, previously to the appearance of internal caries.—*See Fox Natural History of the Teeth, part* II, *page* 13; *Thomas Bell on the Teeth, page* 124; *and others.*

Do the phenomena of internal caries, bear out this conclusion?†

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* "Every part of an animal body, the cuticle and hair excepted, is subject to inflammation; and according to its structure, is inflammation occurring in it, modified both in symptoms and termination."—*Gregory's Elements of the theory and practice of Physic. Vol. I. p.* 280.

† "A tooth which has been the subject of inflammation, will remain without any diseased appearance, for weeks or months afterwards; but at length the consequences which I have described become obvious, by the occurrence of a darkened spot which shows itself through the enamel; and the gradual destruction of the tooth follows, if means be not taken to arrest its progress. I have known a case in which inflammation had taken place through all the *molares* of one side; both above and below; and notwithstanding it was speedily subdued by leeches

In the artificial exfoliation of internal caries, very often, the dead parts are peeled out, and we come to the sound bone at once. This is the white species of decay, of some authors, and is the animal matter of the diseased part of the tooth; the lime having been dissolved or absorbed. This species is never seen in external caries, unless a large portion of the bone of the tooth has been destroyed by inflammation.

&c. yet within a year afterwards, scarcely any of the teeth so affected had escaped the attacks of gangrene, although the corresponding teeth on the other side remained free from disease."—*Thomas Bell, page* 180.

The case mentioned by Mr. Bell is not an isolated fact. We could cite a great number of similar cases if it were necessary. We beg to mention the following case, which we think admirably illustrates the origin of internal caries.

In the month of August 1834, a gentleman called on me for professional aid, stating that his teeth were rapidly decaying, and feared that he should lose many of them in a short time. On examining his mouth, I found his jaws remarkably well developed; the *incisores*, *cuspidati* and *bicuspides* of the upper jaw, stood a little asunder, and without any symptoms of decay. The same teeth also of the lower jaw, were free from disease. But ten molar teeth were decaying, and the disease made its appearance in the centre of their crowns. In seven of these, the bony abcess had burst externally, so as readily to admit a large probe—in the other three, the enamel apparently was perfect, and the progressing disease was only indicated by its color underneath the enamel.

In the artificial exfoliation of these teeth, I found the caries of that peculiar color, which always indicates great rapidity of destruction. In several of them, a large portion of the bony structure was destroyed, and I peeled out the disease, portion after portion, till I came to the sound bone, which was as defined, as the line of demarkation in a sphacelated limb.

My patient was about 25 years of age—of a robust constitution, and one year out from England. He said that in the early part of the previous winter, he had had ague in the face or swelled face, after exposure to cold and wet, and that last spring, he first discovered his teeth to be decaying.

In the above case, it is evident from the great rapidity of the disease, its peculiar color, and its defined boundary, that it must have been the result of inflammation and gangrene of a large portion of the crowns of these teeth. If the teeth be always destroyed by external caries, caused by the chemical action of foreign matter, &c., the peculiar species of caries just mentioned, could never take place, nor could caries ever originate internally, the enamel being perfect. That caries frequently originates internally, is affirmed by the best writers upon the teeth, and is even admitted by those who contend that caries is always caused by chemical agents: but the latter assert, that there is a crack in the enamel, permeable to their causes of decay, which is readily seen by the aid of a magnifier, though not perceptible to the naked eye. This fanciful notion requires no comment.

The teeth of all persons are liable to be attacked by internal caries, even of those, who have taken the utmost care to keep them free of foreign matter from childhood.

The symptoms of internal and external caries, show that their causes are different, as will hereafter be described. The first appearance of internal caries in teeth, that have been kept free of foreign matter, is marked by a peculiar bluish or dark spot, shining or appearing through the transparent enamel, the integrity of which appears perfect; while the first appearance of external caries is on the outside of the teeth, the enamel being first eroded or dissolved by the chemical action of foreign matter and the other agents to which they are exposed. External caries, also occurs in different parts of the teeth, from those of internal caries, and never attacks teeth that are kept free of chemical agents and stand a little asunder.

The effects of climate, great and sudden changes of temperature, hereditary predisposition of the teeth to decay, or malformation of their structure, inducing decay, most conclusively prove, that the proximate cause of internal caries is inflammation of the bony structure of the teeth, as it is certain that none of them could otherwise occasion caries. The advocates for the doctrine, that caries always originates externally, or on the surface of the teeth, must deny that the foregoing have any effect upon the teeth, or their arguments fall to the ground. We trust, that in the consideration of the particular causes of caries, it will appear beyond a doubt, that all these are prolific sources of caries of the teeth.

The *dentes sapientiæ* are very liable to decay; frequently before they have completely pierced the gum, caries will appear in the centre of their crowns.

The teeth of young persons, are far more liable to decay, than those of old persons; and when attacked by caries, are destroyed in far less time; because, as we advance in life, the vascularity of the teeth diminishes, and their structure becomes more dense from the gradual absorption of the animal matter, which enters so largely into their composition, and consequently they are less susceptible of inflammation; and also in the

ratio of our age, is our irritability and the susceptibility of our our systems to inflammation and febrile excitement diminished.

Mr. Bell denies that foreign matter, or any thing that collects about the teeth, or is generated in the mouth, can be a cause of caries otherwise than as an inflammatory agent: that these cannot act chemically on the enamel of the teeth, as they have a less affinity for lime, than phosphoric acid has. But these assertions are certainly contrary to facts and observation: all foreign matter, aided by the action of the saliva, particularly if it be vitiated, will gradually erode and decompose the enamel, and cause the bone of the teeth to decay; this is proved by the following facts:

The enamel next to the gum, if it has been covered with tartar for a length of time, is always found discolored, rough and decomposing.

Persons who neglect their teeth, and allow large quantities of tartar to collect about them, and the particles of food which lodge in their interstices during meal time to remain and undergo decomposition, are much more liable to have them decay, or their contiguous and lateral surfaces, than those who keep them free of these agents.

It does indeed seem surprising, *prima facie*, that such should be the case; but when we consider that solvent power of the gastric juice—that it will decompose the hardest bone submitted to its action, and that the saliva is analogous in its composition—that the hardest animal substances, of which artificial teeth are made, will be rapidly decomposed in the mouth—that most metallic substances are rapidly oxidized, when exposed to the action of the saliva—that plates of silver and gold, to which artificial teeth are attached, the latter not acted upon by nitric acid, soon become black or tarnished in the mouth, and that leaves of these metals, when triturated with saliva, soon become oxidized, although they are so difficult of oxidation; our surprise vanishes, and we are compelled to yield to the abundant testimony of almost every observer.

The fact also, that vegetable acids act upon the teeth notwithstanding they have lesser affinity for lime, than the acid has, which enters so largely into their composition, as will hereafter be mentioned, strengthens this opinion.

From these data, it is contended by Mr. L. S. Parmly, Mr. E. Parmly and some others, that caries of the teeth is always produced by external agents, or the action of foreign matter, corrosive menstrua and putrefactive agents: that hereditary predisposition, climate, the diseases of the general system, and all the causes of internal caries, hereafter to be treated of, cannot have any effect in producing caries, till the bone of the teeth is exposed, by the erosion of the enamel. We shall not dwell upon this doctrine, as we believe it to be wholly repugnant to the physiology and pathology of the teeth. It may be proper, however to mention, that in proof of this theory, they advance the following arguments:—

The teeth of persons who neglect them, are much more liable to decay, than the teeth of those who keep them free of foreign matter. This is certainly true, and shows the great importance of keeping the teeth clean; but the fact, we apprehend, has not the least weight in favor of their assertions; inasmuch, as the keeping of the teeth free of chemical agents, does not protect them from internal caries, and as external caries generally attacks different parts of the teeth, from internal caries.

The teeth of savages, they also say, are not so liable to decay as our own, because foreign matter does not collect about them; but surely, their teeth might be affected by the putrefactive fermentation of food, lodged in the interstices of teeth that are never cleaned. The fact is, the Indian is the simple man. His mode of life exempts his iron constitution, in a great measure, from that febrile state of the system or inflammatory diathesis, so productive of disease in civilized life. It is a common observation, that the teeth of our forefathers were better than ours, though the dental art was almost unknown in their days.

The teeth of the lower jaw, they further say, are not so liable to decay as the teeth of the upper jaw, because the saliva gravitates and dissolves away the tartar and foreign matter from the former. This, however, is totally incorrect; for the *molares* of both jaws are equally liable to decay, and the *incisores* of the lower jaw very seldom decay, though they are more frequently incrusted with tartar, than any other teeth in the mouth, on account of their proximity to the sublingual ducts, and of their situation being more favorable to the deposition of this substance, suspended in the saliva; while the *incisores* of the upper jaw, are particularly prone to disease. We think a more probable and the true reason, why the *incisores* of the lower jaw do not decay, is, that they are very small, of a more dense structure, and protected by a thick coat of enamel. Indeed, the enamel composes the greater share of their crowns. We have said more on this subject than we intended; but we wish to advocate sound doctrine, as we have no dogma to govern us, and to show that the judicious practice of dental surgery, must be founded on correct principles.

The transplanting* of teeth from one mouth to another, as

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* "TRANSPLANTING THE TEETH."

We have often been asked the question by patients if it were possible to transplant a tooth from the mouth of one person to that of another. As a matter of curiosity, rather than utility, we beg to say a few words on this subject. The great Physiologist and Pathologist, Mr. Hunter among his thousand experiments on the living body, inserted the living human tooth into the combs of cocks, and found that adhesion took place, and in one instance, that there was a vascular connexion between the vessels of the pulp of the teeth and those of the comb. From these circumstances, and others which he observed in the adhesion of teeth that had been forced out of their sockets by accident, he proceeded to transplant either living or dead teeth, first extracting the root of the decayed tooth and then slipping into its socket, the new one, and securing it with ligatures. This was a favorite theory with Mr. Hunter, and he recommended its practice to dentists, which is not a little surprising, since he made so many discoveries, and understood the laws which govern the animal economy so perfectly. The *incisores, cuspidati* and *bicuspides* only could thus be transplanted, the diverging fangs of the *molares* prohibiting the practice with them.

Transplanting the teeth was pursued till the occurrence of several

recommended by the great John Hunter, was productive of much mischief.

The theory and practice* of the late Mr. Fay, of snapping off the crowns of aching teeth, with his cutting forceps, and thereby preserving a bony surface for mastication, has been entirely exploded, though it was once countenanced by eminent medical men, as Sir A. Cooper.

As we believe enough has been said to show, that the causes of internal and external caries are different, we shall proceed to analyze these causes.

The causes of caries of the teeth may be divided into,

1st—Predisposing.

2nd—Exciting.

3rd—Proximate.

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cases of disease, proving fatal in one or two instances, transplanted with the teeth, damned it forever.

Throwing aside the moral turpitude of disfiguring one person, for the purpose of beautifying another, and the danger of innoculating disease, (for none but the most abject and degraded would thus suffer mutilation for money,) such teeth could never prove of much utility; for the vascular and vital connexion existing between the sockets and the teeth being destroyed, they would become foreign bodies, and be apt to be productive of much mischief. Hence the impropriety and failure of Mr. Fox's plan of curing aching teeth by dislocation or partial extraction.

* "EXCISION OF THE TEETH."

Whenever the teeth are extracted, their sockets are absorbed, and so great is the absorption, that the loss of the teeth shortens the face an inch and a half. Mr. Fay supposed that the absorption might be prevented by the excision of the crowns of aching teeth, instead of extracting them, leaving the fangs in their sockets thereby preserving a bony surface highly useful for mastication. For this purpose he constructed a pair of cutting forceps, with which he could snap off the crown of an aching tooth just below the nerve, with very little pain to the patient. Having obtained some converts to his theory, and some eminent medical men to recommend its practice, he proceeded some years ago to put it to the test of experience, and commenced his operations in London, where the novelty of the practice attracted considerable attention, in consequence of which, he began to reap a "golden harvest;" when, unfortunately for him, but happily for the community in which he lived, it was destroyed by a tempest, for the operation was irrational, often unsuccessful in its immediate effects, and pernicious in its consequences, as will be seen under the head of "effects of dead teeth, roots, &c." It, like all false theory, was doomed to ephemeral fame, and is now entirely abandoned and forgotten.

These divisions we think more apropos, as applied to the diseases of the teeth, than to the diseases of the general system.

The predisposing causes of caries, are defective organization of the teeth, arising from hereditary affections, or the action of disease during their formation, and certain states of the system.

The exciting causes are climate, great and sudden changes of temperature, and all the general causes of inflammation; diet, a febrile state of the system, as in dyspeptic affections, pregnancy, &c.; certain medicines, as mercury; chemical and mechanical agents.

The proximate cause, is inflammation of the bony structure of the teeth, in both species of decay.

PREDISPOSING CAUSE OF CARIES.

"Hereditary predisposition is among the most common and remarkable of the former class. It often happens that this tendency exists in either the whole or a greater part of a family of children, where one of the parents had been similarly affected; and this is true, to so great an extent, that I have very commonly seen the same tooth, and even the same part of the tooth, affected in several individuals of the family, and at about the same age. In other instances, where there are many children, among whom there exists a distinct division into two portions, some resembling the father, and others the mother, in features and constitution, I have observed the corresponding difference in both as it regards their form and texture, and their tendency to decay."—*Thomas Bell, page* 128.

The whole list of infantile diseases, and the profuse administration of mercurial medicines, for their cure, operating during the formation of the permanent teeth, undoubtedly strongly predispose them to future decay, by producing defective organization of their structure, as is well illustrated in the following case:

My friend, Mr. ——— has a little daughter, nine years of age, all of whose permanent teeth, viz. the four first *molares* and the *incisores* of both jaws, are very remarkable for defect in their structure. They are of a dirty yellow color, and have crumbled away almost to the gum: she was remarkably puny till six or seven years old.

A strumous constitution, is very often accompanied by early and general decay of the teeth. The following striking example is from Mr. Bell:

"Miss H. a young lady, seventeen years of age, possessing that remarkable transparency of skin, and delicacy of features, which too often indicates incipient consumption, consulted me respecting the state of her teeth. The enamel, where it remained, was of that beautiful pearly whiteness and transparency which characterize teeth of a weak and frail texture; but there was not a single tooth, either in the upper or lower jaw, which was not to a greater or less degree the subject of gangrene. Not one even of the inferior *incisores*, so seldom attacked by disease, had escaped its ravages."—*Page* 129.

That morbid affections of the constitution, occurring during the formation of the teeth, produce in them a predisposition to decay, receives a strong confirmation from the fact, that in the greatest number of cases, they become diseased in pairs; for the teeth would naturally participate in the changes which the constitution may suffer during the period of their formation, and would be more or less liable to disease, in proportion to the injury thus inflicted on them.

EXCITING CAUSE OF CARIES.

These will be considered under the heads of internal and external caries.

PROXIMATE CAUSE OF CARIES.

The proximate cause of both internal and external caries, is

inflammation of the bony structure of the crowns of the teeth, terminating in gangrene or death of such parts.

"The proximate cause of caries, appears to be an inflammation of the bone of the crowns of the teeth, which, on account of its peculiar structure, terminates in mortification."—*Fox. Part* II, *page* 12.

"Caries, in fact, is that state of the tooth, in which mortification has taken place in one part, and inflammation in the part contiguous to it; the former, originally produced by the latter, and the latter kept up by a continued contact with the former."—*Koecker's Dental Surgery, page* 211.

"When a portion of any of the other bones loses its vitality, it acts as an extraneous body, producing irritation in the surrounding parts, and a process of absorption is set up in a line of living bone in contact with it, in order to effect its separation. A similar effort appears to me to be made in a gangrene of the teeth, but with a very different result, in accordance with the difference of the structure of the two seats of the disease. When a portion of a tooth is killed by inflammation, it excites, as in the other case, an increased action in the vessels of the surrounding portion of bone; but that very action, which, in such bones as possess greater vital power, becomes remedial by promoting the removal of the cause of irritation, produced in the present case, the continued extension of the disease: for the irritation thus excited, instead of effecting the removal of the part by absorption, as in other necrosed bones, at once destroys its vitality, and renders it only an additional portion of dead matter to that which had already existed. This, in its turn, becomes an extraneous and irritating body to the surrounding bone, in which the same action is set up, and the same mortification produced, and thus portion after portion is successively irritated and killed, until the whole crown of the tooth is destroyed."—*Thomas Bell on the Teeth, page* 126.

Our opinions with respect to the causes of the continued extension of caries differ somewhat from those expressed in the above quotations. After the disease has attacked a tooth, its

action is kept up, not so much by being in contact with the dead portions of bone, as with the various irritants and chemical agents to which it is exposed.

INTERNAL CARIES.

Origin, always in the internal bony structure of the teeth.

Symptoms—The first appearance of this species of caries, will be marked for the most part, by a dark bluish spot, appearing or shining through the transparent enamel, the integrity of which, at this stage of the disease, appears perfect. This spot is usually found in the centre or irregularities of the crowns of the *molares*, and on their side midway between the gum and their grinding surfaces. In the *bicuspides*, it appears on the grinding surfaces, and in the *incisores* of the upper jaw, the spot is seen on the inner surface, near the gum. In this stage of the disease, if the tooth be sawn through, a dark brown streak will be seen extending deep towards the internal cavity, and in the direction, we may suppose the vascular and nervous fibres run. As the disease progresses, these appearances are more strongly marked, till at length, the enamel being undermined, gives way while masticating some hard substance, and exposes a cavity more or less extensive. The disease now progresses more rapidly, from the action of matter admitted into the cavity, till the internal membrane is exposed and irriated, and tooth ache follows.

When internal caries has attacked a tooth, its progress will be governed in a measure, by its structure, or its predisposition to decay, sometimes extending to the nerve in a few months, and at other times, being the work of years.

EXCITING CAUSES OF INTERNAL CARIES.

Climate—The teeth are said to decay much earlier and more frequently in America than in Europe. The great and sudden changes of temprature to which our climate is subject, is one principal reason that is to be assigned, to account for these facts.

That climate has a great effect, in inducing caries of the teeth, is made probable by the following circumstances:

First—Europeans have better teeth than Americans.

Second—The teeth of Europeans who have resided in this country for a few years, are as subject to decay as our own. We have often heard patients declare, that their teeth were not in the least decayed, till they came to America, and enquire the reasons why they are so much more subject to decay in this country, than in England. That the teeth are very liable to decay in this country, is known and dreaded by every foreigner, who takes up his above among us.

Third—A very powerful circumstance, showing the effect of climate, and the origin of internal caries to be inflammation is the following:

Negroes are said to have much better teeth than white people, which Dr. Fitch ingeniously attributes to the peculiar conformation and rotundity of their jaws, which are very favorable to the perfect developement of the teeth. There are a few residing at Montreal, and it is remarkable, that they have much worse teeth than the Canadians. Of the truth of this, abundant observation has convinced us; several, not thirty years of age, are almost edentiless.

The Canadian habitant is hardy, frugal, and accustomed to his climate. He will sally out of his snug dwelling, which he keeps at a temperature of seventy-five or eighty degrees of Fahrenheit, into an atmosphere of twenty or twenty-five below zero, with comparative impunity; while the piercing frost, chills the very vitals of the negro, bred in a warmer and more congenial clime. If climate has such an effect in inducing caries of teeth, we ask, throwing all other arguments aside, if it is not a conclusive proof, that the teeth are susceptible of inflammation, and that inflammation must be the proximate cause of caries? If caries be always produced by external or chemical agents, it is evident that the teeth should not be more liable to decay in one country, than in another.

HEAT AND COLD.*

We may suppose, that very hot or cold drinks, and hot food, as well as great and sudden changes of temperature in climate,

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* "Probably some internal action is continually taking place in the teeth, though we are not able to trace it very evidently. The chief causes of caries are undoubtedly external, but it may be sometimes produced by an internal cause. We have already noticed exposure to currents of cold air, and the medical practitioners of Germany and the north appeal to the opposite extreme of the habitual use of hot aliments, as a still more general and mischievous source of the same evil. In the Swedish *Amœnitates Academicæ*, we have an elaborate examination of this subject by M. Ribe, who tells us, among other things, 'that man is the only animal accustomed to hot foods, and almost the only animal affected with carious teeth.' Whence the author takes occasion to condemn, in an especial manner, the custom of drinking hot tea and coffee; and, in accordance with this remark and recommendation, M. Tillæus, another celebrated writer in the same interesting journal, tells us from Kalm, in his paper entitled *Potus Thcæ*, that the Indians of North America knew nothing of inconvenience of carious teeth or debilitated stomachs, till tea was introduced among them. [Though the Swedes are celebrated for their depth of research, in all scientific subjects, the above observations are bathos.] There can be no question that the two extremes of heat and cold must be greatly, perhaps equally injurious to their health; and as little, that the inhabitants of high northern latitudes must suffer more than others from the use of hot aliments, in consequence of the greater coldness of their atmospherical temperature.

"To the abuse of hot beverages as a cause of cāries, M. de la Salle adds the abuse or excessive employment of sugar; and seems to imagine that these are the two principal means by which teeth are rendered black in their enamel, and carious in their substance."—*Good's Study of Medicine, vol. II, page* 47.

It is a general opinion that sugar and all kinds of sweet things are highly productive of decay, and this opinion appears to be founded on the circumstance that they often occasion painful sensations in the teeth, when taken into the mouth.

Sugar cannot act directly on the teeth, for, though it contains the principle of acidity, its affinity for lime bears but a small proportion to that of phosphoric acid, of which the enamel is principally composed. By fermentation, it gives forth the acetous acid; by distilation with nutric acid, it forms oxalic acid, which has a stronger affinity for lime than other acid whatever. Without one of these combinations, the action of sugar upon the phosphate of lime must be extremely weak, for the mineral acids, the oxalic, tartaric and succinic, are the only known acids, whose affinity for lime, is stronger than that of phosphoric acid. We have kept teeth in sugar and syrup for upwards of four months, and yet they have not undergone any apparent change. The Duke of Beaufort is said to have eaten a pound of sugar every day for forty years, and lived to the age of seventy. After death, his teeth were found to be perfectly sound.

are productive of internal caries, by inducing immediate inflammation of the bony structure of the teeth. No part of the system is so much exposed to the changes of temperature as the teeth, and the low degree of vitality which they possess, ill fits them to bear its extremes. Whenever we take any thing hot or cold into the mouth, we experience a painful sensation, which would seem a monitor that such extremes are injurious. Mr. Fox supposes, that this is a reason why savages and people of tropical regions, have better teeth than the inhabitants of cold or temperate climates. This is undoubtedly, one reason, but a greater, we think, is the habits of the savage, and the climate of tropical regions, which are not subject to the great and sudden changes of cold regions.

DIET.

Different kinds of food, can only be productive of caries, as of diseases of the general system, by inducing an inflammatory diathesis, deranging the digestive organs, or by being of too high or low a temperature. As luxury, indolence and ease, are condusive to diseases of the general system, so are they equally condusive to those of the teeth. Hence savages, in their native forests have good teeth, while those who live near their white brethren and participate in their luxuries and vices, are subject to their diseases, and among them, to the diseases of the teeth. Hence also, our forefathers had better constitutions, and fewer diseases than we have.

The negroes in the West Indies are said to have very sound teeth, though it may be supposed, they eat much sugar.

The use of too much sugar may be productive of caries indirectly, by deranging the digestive organs.

Tobacco.—The use of this plant is considered by some authors, and by many persons, very obnoxious to the teeth. We do not think it at all productive of decay, if used in moderation, but rather preventive than otherwise, as it is a most powerful sedative, and tends to allay irritation. It possesses no principle, that can act chemically on the teeth, though its constant use generally discolors them, or gives them a yellowish cast. If its use be carried to such an extent as to derange the digestive apparatus, it will probably prove injurious to the teeth, as well as the general system.

A FEBRILE STATE OE THE SYSTEM.

A febrile state of the system, is a prolific cause of caries. Very often after severe attacks of illness, the patient will perceive that holes are coming in teeth which he previously thought perfectly sound, and that they are rapidly decaying. This he ascribes to the effects of powerful medicines administered to him. We have seen many cases in confirmation of this fact.

Persons laboring under dyspeptic affections, often have bad teeth. It is a well known fact, that during pregnancy, the teeth of women are much more liable to decay, and decay faster, than at other times.

There are many exceptions to all these, which circumstance has induced some to reject them altogether, but the man of observation will perceive facts enough to convince him of their truth, as a general rule.

MERCURY.

The profuse administration of mercury, is recorded by most dental authors, as a grand cause of caries. It probably conduces to internal caries, by inducing inflammotory action in the bony structure of the teeth, or by making them more susceptible of inflammation. In external caries, in addition to the above, it will vitiate the saliva. That the above opinions are correct, is made probable by the fact, that those persons to whom mercurial medicines have been freely and frequently administered, have generally *wretched mouths.*

EXTERNAL CARIES.

Symptoms—This species of decay is most apt to attack the teeth of persons having a sickly constitution, or derangement of the digestive organs; also, the teeth of those who neglect them, the disease making its appearance on their opposing surfaces, or on their external surfaces near the gum,

where the enamel is thinest, and tartar and other matter most liable to collect.

There is no difficulty in distinguishing external caries: on the sides of the teeth, a depression or hole more or less extensive will be seen, of a greenish or brown color: when the disease has attacked the *molares* or *bicuspides*, on their contiguous sides, it will be indicated by a dark or bluish color, appearing through the enamel, between them. In the *incisores*, it is at once seen, and cannot be mistaken.

The predisposing causes of external caries, are the same as those of the first species, or of internal decay. To these may be added, defective enamel, presenting what is called the honey-comb appearance: such teeth are sometimes of a yellowish color, and of a brittle texture, and are strongly predisposed to decay.

The exciting causes, are chemical and mehanical agents.

TARTAR OF THE TEETH OR SALIVARY CALCULI.

This substance, which is secreted with the saliva, often collects about the teeth in great quantities; particularly, about those near the entrance of the salivary ducts. When it is first secreted, it is quite soft like slime, and may be easily removed with a tooth-brush and dentrifice; but if neglected, it soon becomes concrete and hard. Tartar of the teeth is a common cause of external caries, by acting chemically on the enamel, and exposing the bone of the teeth, to the action of foreign matter, and to inflammation. It discolors, erodes, and decomposes the enamel, as is always seen with teeth, that have been covered with it for a length of time. In this case, the teeth next the gums are found rough, and of a yellow color, and frequently, the enamel is completely destroyed across their necks.

PUTREFACTIVE AGENTS.

By putrefactive agents are meant, the particles of food lodged in the interstices of the teeth, which if not removed, undergo

decomposition, and aided by other agents, have a very pernicious influence. Tartar and putrefactive agents are the grand causes of caries, and of all the diseases of the gums and sockets. The tartar gradually separates the gum from the necks of the teeth, by insinuating itself deeply between them, and aided by other causes, produces inflammation of the gums, which gradually become of a livid color, sore and spongy, and bleed on the slightest touch; the disease extends to the sockets, constituting what is vulgarly called, scurvy in the gum. A puriform discharge takes place around the necks of the teeth—the *periosteum* and the alveoli are gradually absorbed—the teeth become loose, and deposition of bony matter at the bottom of the sockets, gradually protrudes the teeth, and gives them a hideous appearance, and soon they drop out, one after another, perfectly sound, wholly the effect of neglect! This is usually the work of some years: the *incisores* of the lower jaw, are generally lost by scurvy in the gum; for these teeth very seldom decay, for reasons before mentioned. That tartar and putrefactive agents are the general causes of external caries, and frequently of the diseases of the gums and sockets, is proved by the fact, that the teeth of those persons who have always kept them free of these agents, are seldom attacked by external caries, if they have been well formed and developed; and that diseases of the gum and sockets are unknown to such persons, unless brought on by disease of the general system, or the administration of mercurial medicines.

A VITIATED STATE OF THE SALIVA.*

That the saliva may, and does become vitiated, we think is proved by the circumstance, that artificial teeth decompose

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* ACIDS IN THE SALIVA.

In persons of a weakly constitution, or in those having a febrile state of the system, or derangement of the digestive organs, the secretions of the mouth, often become deteriorated as well as those of the body. The saliva often becomes remarkably active under such circumstances, as is

much sooner in some mouths than in others, and that this happens in persons of a weakly constitution, or of a febrile system, or who neglect to keep their teeth free of foreign matter. That a vitiated state of the saliva, assisted by other causes, may be, and is a principal cause of external caries, we apprehend cannot be doubted, from what has been said on the chemical action of the causes of external decay. (See page 76.) The saliva will probably be vitiated by these circumstances. In healthy persons, by neglect, tartar and putrefactive agents, decaying teeth and dead stumps, and decomposing artificial teeth, all indicated by an offensive breath. In sickly persons, to the above may be added a febrile state of the system, derangement of the digestive organs, mercurial and other medicines.

CHEMICAL AGENTS.

Though all the exciting causes of external caries, except the mechanical, act chemically on the teeth; this term may be properly applied to the mineral acids and some of their salts.

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seen from its effects on the teeth especially on artificial teeth which are sometimes decomposed with wonderful rapidity. The cause of this acid quality of the saliva is probably muriatic acid: this is the more probable as the muriatic acid is the principal active agent in the gastric juice, with which the saliva is somewhat analogous in composition. We have often tested the saliva of persons under the circumstances we are treating of, with a solution of the nitrate of silver, but not with satisfactory results, though we think we have occasionally perceived very slight indications of muriatic acid. Persons who value their teeth, under such circumstances should take great care of them. The frequent rincing of the mouth with an alkaline solution would probably prove of advantage, as it is evident that some acid is generated, which the alkali will neutralize.

In healthy persons who neglect the mouth, and allow the food lodged between the teeth to undergo decomposition, an acid also is generated; for the enamel which is principally composed of phosphoric acid and lime, could not discolor and decompose, unless an acid having a powerful affinity for lime be present; and this acid is the acetic. A variety of combinations take place under such circumstances, water and ammonia are probably generated, also carbonic acid, phosphuretted and sulphuretted hydrogen gasses, as are indicated by the offensive breath.

MINERAL ACIDS.*

Whole sets of teeth are frequently ruined, by the careless and culpable manner of administering these medicines.

VEGETABLE ACIDS.

It has been said, that vegetable acids cannot act on the teeth, on account of their having a lesser affinity for lime, than phosphoric acid has. But here quantity predominates over affinity,† as any one may satisfy himself, by putting a tooth into almost any vegetable acid, when it will be gradually decomposed. Vinegar usually contains more or less sulphuric acid, and therefore acts more energetically. Supertartrate of potash will decompose a tooth. However, we do not apprehend, that the vegetable acids, as we use them for a whole-

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* The mineral acids or their preparations are frequently administered for the cure of disease, and though the physician cautions his patient of their pernicious effect upon his teeth, if means are not taken to prevent them from coming in contact with the teeth, yet it frequently happens either from ignorance, carelessness or neglect. Such medicines should always be drawn through a quill or tube, into the back part of the mouth, that they may not touch the teeth and the mouth rinced immediately after with an alkaline solution. The carbonate of soda will make a good one.

† AFFINITY OR CHEMICAL ATTRATION.

Affinity or chemical attraction is a power exerted between the particles of different kinds of matter, causing them to combine so as to form new bodies, possessing entirely new properties.

"It frequently happens the formation of a new compound is attended by the destruction of an existing one. The only condition necessary for this effect, is the presence of some third body, which has a greater affinity for one of the elements of a compound than they have for each other. Thus oil has an affinity for the alkalis, as potassa and soda, and will unite with them, forming soap. But the alkalis have a still greater attraction for sulphuric acid; and hence if this acid be added to a solution of the soap, the alkali quits the oil, and unites with the acid. Sulphuric acid in like manner separates lime from muriatic acid. Thus ammonia will separate magnesia from sulphuric acid, lime ammonia and potash lime. Decomposition and combination occur in each of these instances.

"The influence of quantity of matter over affinity is universally admitted."—*Turner's Chemistry.*

some beverage, or articles of luxury, can have any material influence upon the teeth.

QUACK NOSTRUMS,

As "dentrifices and tooth pastes for whitening and preserving the teeth," do whiten them by decomposing the enamel, and are injurious.

Lotions "for whitening the teeth, &c." Much of the fashionable lotion, sold under the name of the Chlorine Tooth Wash, is very injurious to the teeth, from the action of the muriatic acid, which enters so largely into its composition, and should *never* be used. We have seen lotions, sold with the highest recommendations as preservatives of the teeth, act so powerfully as to destroy the enamel of a tooth immersed in it, in two or three hours.

MECHANICAL AGENTS.

Dentrifices of too gritty or cutting a nature, or not sufficiently pluverized. However, little injury is done to the teeth, by this class, for most persons hardly keep their teeth free of tartar and foreign matter, and if they do not, it is certain they cannot wear the enamel; besides, it is of too hard a nature to be easily worn. It is a great fault with many persons, that they do not use a dentrifice as freely as they ought, if they use one at all, for fear of wearing out their teeth.

Dead teeth and stumps, and decomposing artificial teeth. All these are highly injurious to the adjoining teeth, as is shown by the fact, that a tooth decaying on its side, is sure to effect the adjoining tooth, by the acrimonious matter generated in the decaying tooth.

Lastly, of a crowded state of the teeth, and *irregularities of the teeth.*

The *incisores*, *cuspidati* and *bicuspides* of the upper jaw, when crowded together, or irregular, for the want of early and proper dental assistance, are very liable to decay. Mr. Bell

supposes, that this is owing to the pressure of the illateral surfaces of the teeth against each other, causing inflammation, and consequently gangrene of the bone of the teeth, immediately under the enamel. There may be something in this hypothesis, but we apprehend that a crowded or an irregular state of the teeth, is conducive to caries, by forming a nidus for the lodgement and retention of foreign matter, and thus favoring its chemical action on the enamel till the bone of the teeth is exposed and decays. This is the more probable, as such teeth when kept clean, are not so liable to decay as those that are neglected; and as the enamel is first discolored on its external surface.

In our opinion the *cause* of the *effect*, is the play of chemical affinities, as on inorganic matter, till the enamel is destroyed, when the progress of the disease will be governed by the laws of the animal economy. The decay of the *incisores*, *cuspidati* and *bicuspides*, under the circumstances we are treating of, may be illustrated by the *effect* produced upon two pieces of timber, placed in contact and exposed to the elements—they decay on their contiguous sides; but place them a little asunder and they do not decay.

TREATMENT OF INTERNAL AND EXTERNAL CARIES.

The curative treatment of caries, is artificial exfoliation, or the perfect exterpation of the disease, with instruments, and plugging the cavity with gold.

Prognosis. In the first stage of the disease, or before the internal membrane is exposed, the cure is certain. See the subject "of plugging the teeth."

ODONTITIS.

Inflammation of the internal membrane. It may terminate in resolution or suppuration. Odontitis is usually caused by the exposure of the internal membrane, from caries, to various kinds of irritating matter. It also sometimes happens

spontaneously, in a perfectly sound tooth, and occasionally terminates in suppuration, forming the disease termed by Mr. Fox, *spina ventosa* of the teeth.

Treatment—The various applications in common use, at best are only palliating; therefore, it is best either to extract the tooth at once, or attempt to save it by destroying the internal membrane and plugging the tooth. If the tooth be sound, and the internal membrane proceed to suppuration, it should be trephined, or a hole drilled into its cavity, so as to evacuate the matter; and when the tooth has got well, the hole should be plugged.

PERIOSTITIS.

Periostitis is an inflammation of the *periosteum* of a tooth, and when there are dead teeth or stumps in the mouth, is a common consequence of cold. It frequently proceeds to suppuration, forming gum biles, which sometimes ulcerate through the cheek, producing ugly ulcers, which leave an unseemly cicatrix behind.

Treatment—Removal of the cause, viz. the extraction of the dead teeth or fangs.

EXOSTOSIS.

This disease is an enlargement of the fangs of the teeth, from a deposition of ossific matter, as in other bones, and causes severe pain.

Treatment—Extraction of such teeth.

NECROSIS,

Is the death of a tooth, caused by the destruction of the internal membrane, or disorganization of the *periosteum*.

Treatment—Extraction, if the tooth cause much irritation.

DENUDING PROCESS.

This is a disease which occasions the loss of a portion of the

enamel, and sometimes extends deeply into the bone of the teeth, as though it had been removed with a round file. It generally attacks the *incisores*, and sometimes extends in a straight line across the teeth, to the *cuspidati*, *bicuspides*, and even the *molares*. The teeth have a high polish, and are not discolored. The cause of this peculiar disease, has not been satisfactorily explained, though it is probably friction.

ABRASION.

This is a term applied by Mr. Thomas Bell to a curious process, by which the front teeth and *bicuspides* waste away, without any apparent cause. The disease sometimes attacks the *incisores*.

Mr. Bell mentions only one case in which the front teeth were wasted nearly away to the gum—were highly polished, and could not by any means be brought into contact. Dr. W. Spooner, has seen an instance of this curious disease. It is difficult to assign any cause for it, unless it be chemical action.

In conclusion, caries is the only disease of much importance, to which the teeth are subject, as their other diseases are, comparatively, of rare occurrence. We have before asserted, as the opinion of the scientific dentists of the present day, that most of the teeth may be preserved to the end of life. We beg to quote the following observations of Dr. Fitch, which are very much to the point. He says:—

"It is an impression generally abroad in the minds of medical men and philosophers, that the decay and loss of the teeth is a necessary consequence of advanced years, but I humbly conceive that no mistake is greater. The universality of the fact is not a positive proof, that it is a necessary consequence of age, for there are numerous instances of persons who have not attained the middle period of life, and yet have lost all their teeth. It only proves this, that those destructive *agents* which are the exciting causes of the disease in the teeth, gums and alveoli, are implacable and persevering foes to the health

of these parts, which if not as perseveringly opposed, baffled or removed, will pursue the health and vitality of the teeth until they have eradicated these useful and beautiful organs from the mouth. Had the all-wise Author of nature intended that the teeth of man should be lost in his declining years, and this be a necessary consequence of age, it would always be the case, and an old man with teeth would be a *lusus naturæ*. But this is not the case; a vast many aged persons go down to the grave possessing sound and beautiful teeth. It should be always remembered, that the teeth fail only in the same ratio as the other organs of the system, and that their local diseases are not the natural consequence of age, but of other causes; and if prevented and preseveringly obviated, that it is in the power of every individual by early persevering, and judicious attention to his teeth, to preserve them to an advanced age."—*Fitch on the Teeth. Page* 427.

The universality of caries of the teeth, and the frequency of the diseases of the gums and sockets, show that they are extremely liable to disease, and the necessity of early attention, for preventive treatment.

For proof of the doctrine that the teeth of most persons may be preserved to the end of life, see the preventative and curative treatment of the diseases of the teeth.

[END OF THE INAUGURAL DISSERTATION.]

PREVENTIVE AND CURATIVE

TREATMENT OF THE

DISEASES OF THE TEETH.

CAN THE TEETH BE PRESERVED TO THE END OF LIFE?

In the introduction of this work, we have pledged ourselves to *attempt to show that the teeth of most persons may be preserved to the end of life.* We are fully aware, that in the opinion of many, this will be a difficult task; indeed an insurmountable one: notwithstanding, with a firm belief in the correctness of the views we are about to advance, we shall use our best endeavors to prove to the satisfaction of reasonable minds, that *the teeth of all persons which are constitutionally well formed, or whose structure is good, who enjoy such health that the secretory organs be not destroyed, may be preserved to the last day of their existence.*

Some go even farther, and assert that the teeth of *all persons* may be preserved through life. We do not believe this doctrine, for the teeth of some individuals are so defective in their organization, and the health of others is so bad, and the secretions of the mouth as well as the body so vitiated, that the

teeth will decay in spite of art, though it may very much retard its progress. These cases, however are very rare.

There are but two diseases fatal to the teeth, that require consideration, in order to show the correctness of our position; namely, caries, and disease of the gums and sockets, commonly called scurvy in the gum, and it will be necessary to examine these diseases, how far they may be prevented, and whether they may be effectually cured when developed. The other diseases to which the teeth and gums are subject are comparatively of rare occurrence, and hence of minor importance.

The circumstances under which the teeth are most liable to decay, the effects of which can be obviated, are the following, and most clearly point out the means within our power to be used for the prevention of decay.

First—The front teeth and small double teeth, when irregular or crowded together almost invariably decay: on the contrary, when they stand a very little asunder they rarely decay, if kept clear of foreign matter.

Second—Teeth that are neglected, tartar and other foreign matter allowed to collect about them, and the particles of food lodged in their interstices during meal time, to remain and decompose, are more liable to decay, than those that are kept clean and free of these destructive agents.

PREVENTIVE TREATMENT OF CARIES.

The above facts indicate at once the preventive treatment of decay; namely, so to manage the teeth during the second dentition, that their regularity, symmetry and beauty may always be ensured, and that they may stand a little asunder, or at least not be crowded together; also, that the teeth be kept perfectly free of all foreign matter.

The means necessary to be employed in order to obtain a regular set of teeth, have already been considered, under the head of *irregularities of the teeth.* (See page 39.) Those necessary to keep the teeth clean, will be pointed out in a future chapter.

OF A CROWDED STATE OF THE TEETH.

A crowded state of the teeth, as well as irregularities, is also highly conducive to decay, and for the same reasons; (see page 92,) though the latter are more liable to decay, on account of the great difficulty experienced in keeping such teeth free of foreign matter.

It must appear obvious to all, especially to parents, who have such important duties to their offspring to discharge, that the management of the teeth of children for the prevention of future decay, is a subject of much importance to their welfare. We wish especially to draw public attention to this wholly neglected subject, being impressed with a conviction of the great advantages to be derived thereby.

In addition to what we have advanced on this subject, under the head of irregularities of the teeth, we have some very important observation to make on a method of treatment, that has never been practised to any extent, and we apprehend, never will, such will ever be the repugnance to it, both of the parent and child. The dentist too, from conscientious motives, will scarcely undertake the unpleasant task of endeavoring to enforce its propriety and importance, or to remove unfounded prejudices: much less for the paltry fee! It is this.—In all cases, where there is a certainty of the teeth being crowded together when the child shall have grown to maturity, (which is in the power of every scientific dentist to foretel,) especially, if there be a predisposition to decay, (which can with certainty be predicted from the teeth of the parents and other circumstances,) we would most strenuously recommend the sacrifice of the four posterior *bicuspid* teeth, for the great benefit of prevention of decay in the other teeth!

"Inconsistent," "monstrous absurdity," "preposterous folly," we hear our readers exclaim! but hold till we give all our reasons for this treatment. We do confess, that we should have no small degree of hesitation, in thus boldly recommend-

ing a practice so contrary to the laws of nature, and so repugnant to the feelings, did we not feel that it is a most judicious one, supported by the strongest facts, and wholly divested of theory, fancy and hypothesis.

By the early extraction of these teeth, the anterior teeth will fall back, and the *molares* will come forward, so that when the teeth and jaws are fully formed, there will be no vacuity in the latter, and when the child shall have grown to years of maturity, the teeth will be beautifully and symmetrically arranged, standing a very little asunder, especially the *bicuspides* and eye teeth, and this great advantage gained, that they are not apt to decay, to be lost or disfigured by disease, and that little is to be apprehended comparatively from tooth ache, or being mulcted in the heavy expense of artificial teeth, or the operation for the cure of decay.

That this treatment is against the laws of nature, has no weight in argument against it, for civilized man is an artificial animal, subject to a thousand diseases, from which, in his natural state he is exempt; consequently, it is necessary to trespass upon her laws, to obviate the effects of luxury and refinement. As the anticipation of an incipent disease of the general system, by appropriate remedies, will often nip it in the bud, and thus prevent its maturity and consequences, so, may we anticipate and prevent the diseases of the teeth; but it will often require a bold and decided practice.

The cruelty of the treatment or pain of extraction, is no argument against its practice; for the fangs of these teeth, at the time we recommend their removal, are scarcely half formed, and hence can be pulled out in a few moments with the forceps, and with very little pain to the child: indeed, the extraction of these four teeth will scarcely cost more pain, than of one, when the fangs and jaws are fully formed.

The *bicuspides* of the upper jaw are among the first to decay, and as they decay on their contiguous sides, the disease often makes such progress before it is detected, that it is diffi-

cult to make the operation of plugging effectural. Indeed, in the manner they are plugged by many dentists, the operation is of little utility. Hence another powerful reason in favor of our treatment.

We would not by any means, recommend this practice to be universally pursued, for it would be unnecessary and highly improper; but in all those cases, where there is a certainty of the teeth being crowded from conformation of the parts, we believe it cannot be too strongly recommended.

The utility of what we have been recommending, is often manifested by the treatment employed to remedy permanent irregularity of the teeth; namely, the extraction of four of the *bicuspides.*

There is one exception to this practice, even where the teeth will be crowded. It is this.—The first permanent *molares,* are often very defective in their structure, and decay at an early age. In this case, these teeth should be removed instead of the *bicuspides;* but when there is a certainty of their effectual preservation by operation, they should never be extracted, for they are larger and more valuable teeth, less liable to decay than the former, vastly more painful to extract, and the changes before mentioned do not take place so admirably.

Sometimes the first permanent *molares* decay so early and so rapidly, that it is not possible to preserve them; even by ten or twelve years of age their crowns are half decayed away. In all such cases, they should be extracted, whether the anterior teeth be crowded or not, in order that the changes before mentioned may take place. This treatment cannot be too strongly recommended, for tooth ache will compel their extraction sooner or later, when the parts being fully formed, no favorable changes will take place, and there will be large vacuities in the jaws. If these teeth be early extracted, the back teeth will partly come forward into their places; and another great advantage, the wisdom teeth, which are often small, malformed and apt to decay, will generally come

in larger and better formed, on account of the increase of room for their development.

When it is deemed proper to pursue either of the above methods of treatment, the four corresponding teeth should be removed for reasons that will soon be given. One thing of great importance remains to be mentioned.—The first permanent *molares* are not to be extracted till the second permanent *molares* have so far advanced in their formation, that there be no danger of injury to them by the operation. (See page 41.) When the second *molares* are about to cut the gum, is a proper time for their removal.

"Irregularities of the teeth, and a crowded state of the teeth are the chief predisposing causes of their diseases, and seldom fails even in the most healthy constitution to destroy the best set of teeth, unless properly attended to.

"By an early and judicious application of the necessary preventive treatment, I have never failed to obtain such a set of healty and beautiful teeth, as might be preserved to the end of life.

"As it is often necessary to extract some of the permanent set, at an early period, in order to give sufficient room for the rest, it is a matter of great importance to know which teeth should be extracted for this purpose.

"Those teeth which are the most subject to disease, least important, and the removal of which would afford the most relief to the whole set, are the proper ones to be extracted. As the loss of the *incisores* and *cuspidati* greatly disfigures the set, they ought always to be preserved if possible. I have hardly ever seen a case in which it was necessary to extract any of them, with a view to give room to the rest, where early attention had been paid to the state of the teeth. The preservation of the *bicuspides* should also be a matter of consideration.

"The first *molares* are the most predisposed to decay, and are so situated as to afford, by a timely removal, sufficient room for the anterior teeth, as well as the second and third

molares. If these teeth are extracted at any period before the age of twelve years, all the anterior teeth will grow more or less backwards, and the second and third grinders so much towards the anterior part of the mouth as to fill up almost completely, the space caused by the removal of the first *molares.*

"In almost every instance all irregularity will be obviated by this treatment; but besides this advantage, another important benefit will invariably follow; namely, all the teeth will be improved in health and strength, especially the wisdom teeth. I have seen many instances, where by this treatment, these teeth have penetrated the jaw much sooner, proved of a larger size and possessed a better organization than usual, on account of their having more room for developement, and more plentiful nutriment, from the healthy action induced in the parts.

"I must here particularly observe, that to obtain these desirable effects, it will be absolutely necessary that all the four *molares* should be extracted. The partial removal of these teeth will not only be entirely useless in most cases, but will sometimes even prove the cause of irremediable irregularities: for instance, the *molar* teeth being extracted on one side, and not on the other, the remaining teeth, during youth, will take an inclination to the side from which it has been removed; and if one or both of these teeth be extracted from the upper, and not from the under jaw, or vice versa, considerable disproportion between the two jaws will be produced."—*Koecker.*

"The first permanent *molares* often become carious soon after they appear: the removal of these teeth when decayed aught always to be recommended, although they may not occasion pain, or there be no irregularity of the front teeth; (but especially, if these teeth be irregular or crowded together,) diseased teeth always affect the others, therefore ought never to be permitted to remain in the mouths of children.

"If they be extracted before the second permanent *molares* appear, in a short time they will not be missed, because the

bicuspides will go back, and the second and third *molares* will come forward, so that no space will be left.

"The front teeth will also derive much benefit from this gain of room, as they will probably separate so as to leave a small space between them, which will tend greatly to their preservation; for it is observed, that when teeth are crowded together, they almost always fall into a state of decay."—*Fox's Natural History of the Teeth, part I, page* 63.

CURATIVE TREATMENT OF CARIES.

Plugging and filing are the only means of arresting or curing decay of the teeth. The utility and proper application of them may be considered under separate heads.

PLUGGING THE TEETH.

The utility of plugging the teeth for the cure of caries, as now practised by scientific dentists, is known and appreciated by many persons; by more, it is not sufficiently known or understood, to induce them to have recourse to the operation, or if they do, to employ such services, as shall prove of much advantage. There are others who distrust its utility altogether. For the information of all, we shall present a mass of authority and facts, from the best dentists of the age, that must carry conviction to the mind of any reasonable man.

"Stopping or plugging the teeth, is the filling up of cavities produced by decay, with some artificial substance. This operation is of great antiquity. It was known to the ancient Romans; and even Galen and Œtius, among the Greeks, treat of it in their writings.*

* Dental surgery, as it is now practiced on principles of science by all thorough dentists, is comparatively of recent origin, though some writers fond of ancient lore would have us believe, that it is coeval with the earliest ages. Mechanical dentistry, or the substitution of artifical

"By this beautiful and useful operation, carious teeth may be preserved for many years; in most instances, during the remainder of life; and, not unfrequently, from ten to twenty teeth may be effectually preserved by this operation, in the same individual."—*Koecker, page* 381.

"There is no subject connected with dental surgery, of more importance than that of stopping. There is none better deserving the attention of the student, nor is there any in which the dentist may more successfully display his professional skill.

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teeth, was undoubtedly practiced in very early times, as personal appearance and ornament have ever had considerable influence with mankind. It was certainly practiced among the Greeks and Romans, and even by the Egyptians and Arabians. In their medical works are also found directions for the performance of some operations for the cure of the diseases of the teeth, gums and sockets; but we find very little said of the proper surgical means to be employed for the prevention or cure of decay. They never plugged decaying teeth until the disease had formed large holes in them, when they plugged them with lead or gummy cements, without half extirpating the decaying and dead parts. Hollow, aching teeth, they generally used to plug with lead, previously to the performance of the operation of extraction, with their formidable instruments, in order to render the tooth less liable to break.

About the commencement of the seventeenth century, the dental art began to be practiced in Europe as a distinct profession, but not with that success which attends the operations of thorough bred dentists of the present day. In America, forty years ago, it was scarcely practiced or known.

In olden times all surgical operations were performed by menials, under the directions of the physicians, who were priests and poets as well as physicians, such operations being contrary to the tenets of their religion, as well as beneath their dignity. It was not lawful for them to defile their sacred persons by taking the life of any animal, or even letting blood. Indeed, it is only about one hundred years since the bright star of surgery, which now shines with such dazzling splendor, emerged from the clouds of darkness that had ever enveloped it. The surgeon of the present day, guided by that intimate knowledge of the relative structures of the human frame, which he can only obtain and retain by constant conversation with the dead, attacks with success, the most formidable local disease, with which, the surgeons of past days did not dare to interfere. He even pursues it so near the very vitals of the body, that a careless cut of the thickness of a wafer would prove instant death; and thus cheats grim death of its victim, and rescues thousands from an untimely grave. Here we see illustrated the great benefits to be derived to mankind by the cultivation of practical science, divested of theory and hyphothesis.

"Were we to judge indeed, from the almost innumerable cases of failure which occur, we might conclude that the uncertainty of the operation was so great, as essentially to diminish its utility and importance. These cases however, occur under the treatment of ignorant persons, who are alike incompetent to the mechanical and surgical part of the operation, and who are equally incapable of choosing a proper time for its performance."—*Snell, page* 151.

"The benefits of the operation of stopping the teeth are so truly important, that it is impossible to recommend it to earnestly to the public; for thousands of the most useful teeth, which otherwise would, on account of their painfulness, be sacrificed by extraction, may thus be preserved, not only for many years, but for the remainder of life. It will always succeed, if early and properly performed."—*Parmly's Notes to Brown's Dentologia, page* 143.

"In a practice of upwards of twenty years, I do not remember a single instance of failure in the operation of plugging teeth, favorable to be operated on, unless it could be traced to some untoward circumstance. I have lately been removing tin pluggings, (the juices of the mouth having oxidated and dissolved away the metal, so as to expose the teeth to decay) from teeth which I plugged more than ten and fifteen years ago, for the purpose of re-stopping with gold, and have in almost every instance, found the bone of the teeth at the bottom of the pluggings, perfectly sound and protected from decay."—*J. R. Spooner, (of Montreal,)* 1833.

"Plugging of the teeth, if properly done is one of the most useful operations in dental surgery.

"If well done the preservation of the tooth will be in almost every instance complete."—*Fitch on the Teeth, page* 378.

"A gentleman has just paid me a visit who has been my patient since the age of eight. During one of his vacations I saw some incipient disease and stopped it: twenty years have elapsed, yet I found the same old stopping which I had insert-

ed in one of the large double upper permanent teeth, and also in one of the large double under teeth.

"In 1783, applied to me James Russel, Esq. On examining his mouth, I discovered considerable decay in one of his large double under teeth, and after cleansing out the cavity, I plugged it. Mr. Russel lately informed me that the same stopping and tooth remain perfect and firm to this day, (1825.)

"I have no hesitation in affirming this to be one of the most important and useful operations that can be performed."—*Sigmond.*

"The author had lately an opportunity of curing and afterwards plugging with gold a carious and tender tooth, for one of our most celebrated professors of music; a cavity in the other side of which tooth had been successfully stopped, thirty-six years before, by the father of the celebrated Talma. He is also acquainted with the case of a well known medical man in London, who has a serviceable tooth which has been plugged forty-seven years."—*J. P. Clark, page* 69.

We have seen a great number of teeth, which have been plugged ten, fifteen and twenty years, and are still perfectly sound. We have twelve teeth in our own mouth, some of which were operated on near seven years ago, and as yet they do not show the least symptom of farther decay. We have extracted many teeth plugged long before, and the pluggings still remaining firm, decay having attacked other parts of the teeth and caused their destruction. Finally, every dentist who has practiced his profession on principles of science and integrity, will bear the most unequivocal testimony of the utility of plugging decaying teeth in the first stage of the disease.*

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* "If the operation of plugging is so useful and sure of success, how is it that it so often fails, and is of no utility whatever?" is a question often asked us.—We answer, that such operations have not been properly performed—that such services, as would ensure success, have not been secured—that an empiric has been employed, or an ignorant incompetent person, for the sake of economy. There are very many persons, "a

That the operation of plugging a carious tooth may be perfectly successful, it is necessary that the tooth be favorable to

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penny wise and a pound foolish," who employ "cheap dentists," thinking the dental art to be wholly mechanical—that it does not require much science to practice it, and that one man can serve them as well as another, and for half the fee. "This is the rock on which such persons split," as far as the preservation of their teeth is concerned.

The operation of plugging, in order to secure complete success, must be performed in the nicest and most substantial manner, and under favorable circumstances. It cannot be hurried, for it is often extremely difficult, and requires much *patience*, both on the part of the operator and patient. Mr. Koecker justly observes, that "many dental operations are as difficult to be performed as any in general surgery, though the consequences, of course, are not so serious." It is here that incompetent persons fail, they do not half extirpate the disease, or properly fit the cavity for retaining the plugging, which they then fill in such a careless manner, that it soon falls out, or the juices of the mouth and foreign matter being admitted, the tooth decays. One of those persons who *adorn* our profession, lately told us, with great gravity, that he could plug forty teeth in a day, and as well as any man in town! For our own part, we are not ashamed to confess that ten or twelve teeth, as a general rule, are as many as we can well plug in the same time, and work hard. We have sometimes spent an hour and a half upon a single tooth, where the operation has been very difficult.

It may not be inappropriate for us to point out in this place, the difference between the practice of a thorough and scientific dentist, who understands the laws of the animal œconomy—the laws which govern disease, and the principles on which disease must be treated in order to effect a cure; and that of an ignorant person, who knows nothing of these laws, &c. Also the great advantage that would be derived to community, if means could be adopted to put down quackery, and to make "every man worthy of his hire," by obtaining a good medical education. Furthermore, that our reasons for condemning quackery in the dental art, in the strongest manner, are not founded in prejudice or illiberality, but in a sense of duty that we owe to community, to our subject, and to our profession.

We believe that near one half the diseases of the teeth, may be wholly prevented by the early and judicious application of proper means. To effect this great object, will require a man, having a thorough knowledge of the causes of these diseases and of disease in general, of the natural history of the teeth, &c.—in a word, a man having at least, a knowledge of the general principles of both medicine and surgery, that he may know what remedies are proper, how to direct them, and what will be their ultimate results. (See page 26, 41 to 44.) An ignorant person, no matter how honest his intentions may be, cannot evidently, properly apply the necessary means for the preventive treatment of the diseases of the mouth, though this treatment, if properly directed, will prove of more advantage to community than the curative treatment of those diseases. He cannot treat irregularities of the teeth; if he attempt it, ten to one, that he does more mischief than good, and often produce the very state of teeth, he endeavors to prevent.—(See pages 25 and 42.)

be operated on, the disease perfectly extirpated, and the cavity plugged with gold as solid as the hills, so as completely to ex-

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The curative treatment of the diseases of the teeth, as practiced by ignorant or incompetent persons, is of very little advantage; nay, it is often of great injury. When they plug teeth, (not knowing the causes of the disease and how it should be treated,) they do not perfectly extirpate the disease, or properly fit the cavity for retaining the plugging, nor do they properly fill the cavity after it is fitted; hence the diseases progress, the plugging comes out, and the unfortunate individual condemns the dental art. The operation of plugging the front teeth and small double teeth, is extremely difficult of performance, and requires great patience and dexterity. The plugging of these teeth, as it is done by *the mass* of dentists, is of little or no advantage. It is only the thorough going, well informed men of integrity, who overcome the difficulties and render such services as shall triumph over the disease, and cannot be too highly appreciated by those who require them.

The effects of the mal-practices of ignorant persons or imposters, are often displayed in the operation of *filing* the teeth. They often file the teeth asunder, even when perfectly sound, for the prevention of decay, "for fear they will decay" as they term it, with rough and coarse files, and leave the sides unpolished. This practice of gross, preposterous and villanous imposition, has been practiced to a great extent in the country, by travelling empirics, and has been productive of great injury; for the country people, not generally taking so much care of their teeth, to keep them clear of foreign matter, as those in the cities, would be apt to suffer most from this imposition. The manner in which the teeth are often mangled, cut up, and disfigured by such persons, is disgusting and makes an honest man blush for his profession.

The file properly and judiciously employed, or as it is used by all good dentist (see filing the teeth,) is one of the most useful instruments we possess for the cure of incipent decay.

The evil effect of ignorance, or a want of knowledge of the laws which govern the animal economy,—the necessity or importance of science in the practice of that part of the dental art, which every body considers to be wholly mechanical, and that it does not require any, or much knowledge to practice it properly—and the advantage that would accrue to community, if scientific men only were employed, are displayed in a striking manner, by the substitution of artificial teeth on plates, as practiced by many dentists. The plates do not properly fit—they press hard against the adjoining teeth, and the clasps or springs, by which they are attached to the adjoining teeth, are too small or grasp too firmly. The dentist tells his patient, that the teeth will feel awkward for awhile, but that he will soon become accustomed to them. This is the case, but what is the result? The effects of this pressure exerted? of the springs? Mark well, for the results we are about to mention, very generally attend the substitution of teeth on plates, attached to the natural teeth.

First—The undue and continued pressure causes the teeth to which the artificial ones are attached, to become diseased in the socket, and nature sets herself to work to remove the cause of irritation, in consequence of which, they protrude by degrees, and at length fall out.

clude all moisture and the atmosphere. If the cavity be unfavorable for filling, or cannot be made so that it shall retain

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Clasps which are too small or grasp too firmly, produce the same effect, and also occasion the teeth to decay, and often to become so exquisitively sensitive, that the artifical teeth cannot be worn, or with great inconvenience. We see the effects of these mal-practices illustrated every day. We have two such cases on hand at this time. In one case, the four *incisor* teeth were attached to the eye teeth, and was done by a first rate mechanical dentist, and beautifully executed, but unfortunately for his patient, he knew nothing of the laws of the animal economy. The effects of pressure in less than two years, has caused the ruin of the teeth to which they were attached. The other is a similar instance of mal-practice. It is a common observation among mechanical dentists, "that plates are ruin to the teeth." The reason is, that they do not properly adapt their plates and teeth to the parts. They do not make them fit so as not to exert too much pressure, for pressure applied to any part of the animal frame, will cause changes to take place in such part.

We have seen individuals who have been obliged to have cases made at different times, in consequence of the loss of teeth, to which the artifical ones were attached, caused by the improper manner of attaching them. Is it not evident then, that to practice even mechanical dentistry as it should be, requires a man possessing considerable knowledge of the laws which govern the human system?

The treatment of the diseases of the gums, sockets, and maxillary bones, which fall under the care of the dentist, in order to effect a cure, requires considerable knowledge of medicine and surgery. The ignorant person does not, and cannot treat these diseases with success. His treatment only aggravates them.

We trust that enough has been said to show that dentistry, in order to prove of utility, must be practiced on principles of science and integrity. Every part of our country is overrun with ignorant and pretending persons, who assume to discharge the functions and duties of this profession; and having dignified their names with the title of *Doctor*, they travel about the country, imposing upon the people, doing their teeth a vast deal of injury, in consequence of which the profession is degraded, and public confidence to its utility almost wholly destroyed.

Nor are these *sapients* confined to the country; they abound in our large towns also. There are 70 or 80 dentists in New York. Out of these Mr. Parmly informed me that he thought there were about 20 who understood their profession, and practiced it faithfully.

When we consider these facts, it is not at all surprising, that so many of our citizens should distrust the utility of dental surgery, and that so many opinions should prevail on the subject. Quackery in any country, depends upon community. If it be patronized it will flourish. The opinion which very many persons entertain, that dentistry is wholly a mechanical art, and that it does not require much science to practice it, is highly conducive to charlatanism, and leads many to be imposed upon.

The following case, which occurred to us sometime ago, aptly illus-

the plugging securely, the operation will be of little use. If the tooth be very much decayed, so as badly to expose the

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trates the inutility of dental operations, unskillfully or improperly performed, and the prejudicial effect of such operations on community.

November, 1832, called to extract some aching teeth for the daughters of Mr. ———. Found many of their teeth decaying: the young ladies informed me that their teeth were plugged two years ago by ——— but that the pluggings soon fell out: there were very few remaining, and these did not protect the teeth from decay, on account of the imperfection of the operation. After the extraction of the teeth, represented to Mr. ——— what might be done for the preservation of those decaying. He replied to this effect:

"Sir you will pardon me when I tell you, I have little faith in the means you recommend for the preservation of my daughters' teeth. I have spared no expense that they might be preserved. They were all plugged two years since, for which I paid 150 dollars, yet you say the operations have failed. I believe they have been more injured than benefitted, and that this plugging and filing the teeth break up their structure and make them decay more rapidly."

Feeling the just reasons for his prejudice, we repressed our rising indignation, and without further parlance took our leave, regretting exceedingly that our profession should be disgraced by such imposition. There is nothing more cutting to the feelings of an honorable mind, than distrust of its integrity. It cuts to the hearts core. He cannot stifle his honest indignation. The mercenary wretch bows in humble submission, and uses his smooth and flattering tongue to effect his purpose.

We think it unfortunate for community, that any man can practice dentistry who chooses, for it fills the profession with incompetent persons, who fleece those who employ them without confering any benefit, but often doing them much injury. The dental profession should be protected by legislative enactment: every person before he be permitted to practice it, should serve a term of pupillage, and pass an examination before a competent board of surgeon dentists; this would fill the profession with honorable men; men who would serve their patrons with fidelity and success; and that too, at a more reasonable rate, than is paid by many for the preservation, or rather destruction of their teeth. We believe that most persons who have lost their teeth, might have had them preserved, at a far less expense, than they have paid for artificial ones.

Dental surgery is now practiced by the honorable and well educated members of the profession, in our country in very great perfection, and I am proud in believing, that it is generally practiced by them better than in any other.

"In the United States of America, although little or nothing has been done in the way of publishing upon the subject of Dental Surgery, yet I feel myself authorized to say, that in no part of the world has this art attained a more elevated station.

"The operative part is by far more extensively cultivated, and has arrived at a state of excellence much greater in that, than in any other country to my knowledge, but unfortunately this superiority is only to be found in the practice of a very limited number of men of talents and principles."—*Koecker, page* 20.

nerve, the operation must often be unsuccessful. If the operation be not properly performed, it is, at best, of little use, and often of positive injury. Hence ignorant persons and impostors do injury to community, and degrade the dental profession below its deserved standing.

As soon as a tooth begins to decay, the disease should be at once extirpated, and if necessary the cavity filled. There are great advantages to be derived from this procedure; for incipient decay, especially of the front teeth, may often be effectually eradicated without the operation of plugging. If it be necessary to plug the tooth, the decay can be cut away, with proper instruments, in a short time, often with little or no pain to the patient, and the operation is always sure of complete success, if properly performed. There will be no inconvenience experienced afterwards, and the patient will feel his teeth sound, as though nothing had been done to them.

It is a great mistake with most individuals, that they do not apply to the dentist early enough, to obtain the greatest possible benefit from his art. Many do not think of the preservation of their teeth, till tooth ache, a faithful monitor of the future, compels them to seek relief, when perhaps some of them may have so much decayed, that little can be done for their preservation; or at least, the operations are much more tedious and painful, and not so sure of success. Hence, in a

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The few well educated members of our profession, in New York, have been using their best endeavors to elevate it to its proper rank and usefulness. For this purpose, a "*Society of Surgeon Dentists*," has been formed, for the honorable and laudable purpose of mutual improvement.

The society has organized itself, a library is being established, and a course of lectures on the subject of the profession is anually to be delivered.

It is also the intention of the society to petition the State Legislature, as soon as proper, for the passage of a law, to put down quackery, by making it necessary for those who would practice dental surgery, to thoroughly understand the profession, and to pass a regular examination before a competent board of surgeon dentists; also for a charter to found an institution for qualifying students to practice dentistry. Which measures if adopted and put into execution, will prove of incalculable advantage to the community.

great measure, have arisen, the exaggerated ideas, which people generally entertain as to the pain of dental operations. Many persons who have experienced these operations, very much exaggerate the pain of them. They often declare that they had rather have a tooth pulled than one plugged, as to the pain they experience. This is wrong, as it serves to impress those who have not had operations performed upon their teeth, with the idea of severe suffering. Many, indeed, are so apprehensive of this, that, though convinced of the utility of dental surgery—of the importance and necessity of having something done to prevent the loss of their teeth, they neglect them, till many of them are inevitably lost. To such, we would recommend the resolution to have some one simple operation performed, as a favorable tooth plugged, that they may judge for themselves, as to the severity of the pain they will probably experience under the operations, and whether they can submit to it. We have generally found this plan completely successful; for it is half the task to make a beginning, and the unfounded fears of the patient quickly vanish under the management of a skillful operator.

All dental operations, save that of extraction, when early and properly performed, are generally attended with little pain, and often, none at all. We never yet saw the *patient*, who had rather have a tooth *pulled* than one *plugged*, when he came to the "tug of war." We often see this verified; for it rarely happens, that there are teeth in the mouth so much decayed, that they cannot be preserved and are to be extracted. During the operation of plugging, especially if the patient is irritable and the teeth uncommonly sensitive, we frequently hear the exclamation, "I had rather have a tooth pulled than one plugged," but when the former operation comes, "I had rather have a dozen teeth plugged than one pulled."

There is a very great difference in the sensibility of the teeth of different individuals: some suffer much pain in having decay extirpated from their teeth, even far from the nerve;

while others do not experience the least pain. We have frequently exposed the very nerves of teeth, much decayed, and even wounded them during operations, yet the patient has declared that he did not suffer. Indeed, so great is the difference in the sensibility of the teeth, that the feelings of the patient form no criterion, by which the dentist judges how far it is safe to proceed without danger of exposure of the nerve. He is guided in his operation, by the anatomy of the tooth and its appearance.

Much also depends upon the operator himself. We know from experience, as well as from abundent observation, that a careless and rough operator inflicts much more pain, than a careful and dexterous one.

That the dread of pain of dental operations should deter persons (as it often does,) from having them performed, when convinced of their utility and necessity, is unfortunate for them, nay, foolish. If they were ten times as painful as they really are, it would have little influence with a resolute person, who values his teeth and dreads tooth ache.

"A stitch in time saves nine," is an old and vulgar adage. We know nothing, to which it can be applied with more force, than to the management of the teeth in every respect from infancy to old age.

OF A FIT STATE OF THE MOUTH FOR THE PERFORMANCE OF OPERATIONS ON THE TEETH FOR THE CURE OF CARIES.

The following observations of Mr. Koecker, are in our opinion very judicious:

"To render the operation of stopping the teeth certain of success, it is indispensibly necessary to remove every local exciting cause of inflammation, especially every disease of the mouth that might be considered the principal exciting cause of the local maladies of the teeth, before undertaking the operation of plugging the affected teeth.

"When the parts in immediate connexion with the teeth, such

as the gums, the alveoli, periosteum, and the maxillary bones, and even those more distant, are in any way morbidly affected, they should be previously restored to healthy action.

"For more than thirteen years, I have made it my invariable rule, in my own practice, not to plug teeth until I have completely cured all the diseases of the gums, sockets and maxillary bones; by using this precaution, I have seldom failed to be completely successful in the application of the remedy."—*Koecker, page* 414.

TREATMENT OF THE TEETH, WHEN CARIES HAS PROGRESSED TO THE NERVE.

When decay has extended to the nerve, and causes the tooth to ache, extraction is the usual remedy resorted to by all who have sufficient resolution to induce them to undergo the operation. The teeth are so liable to caries in this country, and often decay at so early an age, and so rapidly, that it is a matter of very great importance to all, especially to those who have been so unfortunate as to lose many teeth, whether some means cannot be devised for their preservation.

"When the nerve of a tooth has been so much exposed by decay, as to leave no hope of curing it but by extraction, it were much to be desired that medical science should lead to the discovery of some principle, that would quickly extirpate fleshy substances, or at least their diseases, without at the same time acting on the bony structure of the teeth."—*System of the treatment of the diseases of the teeth, by J. P. Clark, A. B. pags* 89.

This desideratum has been happily discovered, and its success has been thoroughly tested, in a practice of many years. *The nerves of the teeth may be certainly and effectually destroyed, with little or no pain to the patient, and without the least danger, by means of a little arsenious acid, (arsenic, ratsbane,) applied to the nerve.*

We claim for our brother, Dr. J. R. Spooner, of Montreal, the credit of this invaluable discovery, and for ourselves no

small share of credit for thus frankly laying it before the dental profession and the public.

We have proved that the vitality of the fangs of the teeth, which is necessary to prevent them from acting as foreign bodies in their sockets, does not depend upon the internal membrane or nerve, (see page 57.) This fact is of greater importance than, one would suppose at a first view, for thousands of aching teeth which are daily being extracted, may be effectually preserved by taking advantage of it. This is a matter of much moment to those who have been so unfortunate as to lose many teeth.

So complete and satisfactory is the operation of arsenic in destroying the living fibre, that, instead of extracting teeth whenever the nerve is badly exposed, we destroy it, plug the teeth, and thus preserve them. Teeth thus treated will often last a great number of years, and prove highly serviceable.

Arsenic will not only positively destroy the nerves of the teeth, but it possesses the great advantage, that it does this without causing pain! If it be applied to an aching tooth, it slightly augments the pain, but when applied to a nerve, not inflamed it does not cause any pain, worth minding! Of late, we have applied to aching teeth, a mixture, composed of arsenic three parts, and acetate of morphine one part, the morphine, (one of the active principles of opium,) being the most powerful odontalgic remedy, (remedy for the tooth ache,) that we know of. Thus the most violent tooth ache may be effectually cured, without additional pain, a circumstance well worth considering. We cannot too strongly recommend this treatment to the public, under the circumstances we are treating of. No selfish views evidently actuate us in making these declarations. They are not the puffs of pretenders. They are not involved in mystery, but we explain the whole. "The Royal mineral succedanium," involved in the mystery of empiricism, a worthless thing, excited great curiosity in New York last year. We doubt much if this truly valuable dis-

covery will excite any interest; hence we are a little anxious to urge it.

Arsenic is the only substance with which we are acquainted, that will effectually destroy the nerve of a tooth. Nitric acid and nitrate of silver, (lunar caustic,) have been much employed for this purpose. They were favorite tooth ache remedies with Hunter and Abernethy, but they do not generally do this effectually; they only destroy the surface of the nerve; indeed but the small portion of it exposed; besides they destroy the tooth. A hot wire is the remains of barbarism, cruel as death, and does not become the present enlightened day.

A drill, as well as the hot iron, is very painful, and is enough to strike horror to the soul of a patient. The arsenic effects the object like a charm, and under proper management never fails of complete success. Many persons of course would be apprehensive of danger from its use; the eighth of a grain of arsenic is a common dose in medicine; the twentieth of a grain is quite enough to destroy the nerve of any tooth. But let no ignorant person dabble with this remedy. As we recommend it so strongly, it is a duty incumbent on us, to caution the public. There are many who would have no hesitation in filling a large hollow tooth with arsenic, on the strength of this recommendation. There are some who do not even know what it is! We know of one instance, and but one, thank Heaven, in which the application of the remedy, was attended with fatal consequences, and we merely mention it as a warning to presuming quacks.

A man having a violent tooth ache, applied to an ignoramus for relief, who having heard that arsenic would destroy the nerve, proceeded to fill the tooth which was very much decayed, with this substance and did not properly confine it. The man returned home: the pain continuing, he took a hearty dram; the arsenic was swallowed and the man poisoned.

We have used this remedy in hundreds of instances, with-

out ever experiencing any ill effects: nor can any danger ever attend its proper application.

Whenever the nerve of a tooth can be preserved, it should not by any means be destroyed.

Very often in the artificial exfoliation of teeth much decayed, the nerve will be exposed before the disease can be perfectly extirpated; and if such teeth be now stopped with any metal, without the leaden cap, pain will certainly follow and compel the patient to have the teeth extracted; but if the nerve be first covered with the lead, the operation is usually successful; indeed, we may say, that it is rarely unsuccessful, if skillfully performed. The lead seems to act as a direct sedative. We have often exposed the nerves of teeth, and even wounded them so as to make them bleed, before we could extirpate the disease, and yet when treated as above, no pain has followed. We have often been asked,—How can a tooth be filled when the nerve is exposed, so that the metal may not press upon it, and cause pain? The reason is this:—The ceiling or roof of the cavity of a molar tooth, is convex, or rather oval, and it projects considerably into the cavity, while four *cornua* run a little towards the grinding surface: consequently, we can proceed much farther with our instruments, directly in the centre of a tooth, towards the nerve, than a little to one side, without exposing it, and it is at one or more of these *cornua*, where the nerve is usually exposed.

The practice of capping the nerves of teeth, was introduced and recommended by Mr. Koecker, several years ago, and is truly a valuable improvement in dental surgery.

Lead leaf may also be used, but great care must be takenthat the pressure applied in forcing the plug, do not indent the leaf so as to press upon the nerve, in which case pain will certainly follow. The plate of lead being thicker and more unyielding, obviates this objection. Koecker and Snell recommend the nerve to be cauterized, previously to the operation of plugging. We think the practice a good one; but its proper application will require more tact and ingenuity than most

dentists possess. The late Mr. Hudson, of Philadelphia, used to apply astringents, as nut-gall, to the naked nerves to occasion their contraction, to enable him to plug the teeth. We doubt if this practice possesses much utility.

We will mention for the benefit of professional readers, that Dr. Torrey, Professor of Chemistry in the College of Physicians and Surgeons, recommends a little asbestos to be put into the cavity of a tender tooth, previously to plugging. As it is very soft and insoluble in water, he thinks it may prove of great advantage.

If the nerve of a tooth be much exposed, we think it much the better practice to destroy it at once, by means of the arsenic, and then to plug the tooth securely. All other methods of treatment are often abortive, and if successful, the nerve often dies away gradually.

OF THE MATERIALS PROPER FOR STOPPING THE TEETH.

"*Materials for stopping teeth.*—Various materials and metals have been proposed for stopping the teeth, all of which are more or less objectionable. Lead, tin, and silver, are frequently employed for this purpose, but they are all destitute of the properties indispensible to success, in the performance of the operation. Any of these metals will protect the cavity from caries, for a short period only. They will all soon corrode, and then become more injurious than the original disease; and in every case will ultimately prove the cause of destruction to the tooth, which might have been preserved by proper treatment. Although platina is a more suitable metal than any one of those above mentioned, yet, in consequence of the necessity of amalgamating some other metal with it, to render it malleable, it is by this adulteration rendered insufficient for the purpose. It is never accompanied by that cleanly and bright appearance, so desirable for teeth that have been stopped; but it is productive of a dingy opacity of the tooth's surface, which is apt to mislead the dentist at a future period, into an idea of its being again

under the influence of caries, and is therefore also objectionable."

"*Fusible Metal.*—A composition used by some in this country, and generally in France, consisting of bismuth, 8 parts, lead, 5 parts, and of tin 3 parts, soluble at a heat of boiling water, and called fusible metal. In the first place, this metallic compound is as liable to corrode as either lead or tin, and possesses all the other noxious chemical qualities of both.

"Secondly, the metal introduced into this cavity at the temperature of boiling water, will not only destroy the vitality of the living fibres, but also the whole surface of the healthy bone, and thereby produce some dead bony substance and caries, the very disease intended to be cured by it, which will inevitably destroy the teeth.

"Thirdly, the irritation of the hot metal subjects the living membrane of the tooth to inflammation, and destroys the vitality of the tooth.

"A fourth objection is, that the metal being poured into the cavity in its liquid and expanded state, will contract as it cools; and consequently, instead of being a perfect filling up, it leaves interstices for the reception of foreign matter, which will destroy the tooth more quickly than if the cavity had not been stopped at all."

"In fact, gold is the only metal, the durability of which can be depended upon and which combines all the advantages required for the due performance and success of this difficult and important operation. It is the softest and most malleable metal; it will never corrode, and it produces the most beautiful effect upon the appearance of the tooth stopped with it, so much so indeed, that a front tooth which is properly plugged, in such a manner that the gold is not seen, is actually improved, not less in appearance than in health.

"Even gold as it is often prepared for the dentists, though free from copper, is not unfrequently alloyed with silver, which renders it harder and in some measure liable to corrode,

and is therefore in this state to be rejected."—*Koecker, pages 392, and 405.*

CEMENTS.

Various substances in the form of cements have been used in past ages, and are still, for the purpose of filling decayed and hollow teeth. All such substances are of very little use for the preservation of the teeth; they are at best, only paliatives, and are never used by honorable and well informed dentists, unless for a temporary purpose. Cements are composed of earthy substances which have the property of hardening under water, (as tufa and terras, which are compounds of iron, silex, allumine, and carbonate of lime,) mixed with the filings of metals, usually of zinc, in order to render them harder; also of metals amalgamated with mercury.

Any person who is at all acquainted with the principles on which a carious tooth must be plugged, that it may be cured, will at once perceive, that no cement can ever be devised, that shall prove of much utility for the purpose of filling decaying teeth. In order that a carious tooth be cured and protected from future decay, it is necessary that the decayed and dead portions be completely cut away, and the cavity plugged air and water tight. Cements do not, nor can they ever be contrived to effect their object. We have seen many teeth stopped with cement, and it may be well to mention the result of one case. In 1832, a lady called on us for the purpose of having a tooth extracted, which had two years previously been stopped with cement in London. She had four other molar teeth operated on at the same time. We recommended the cement to be removed, and the teeth plugged with gold, which she did not prefer to have done. In less than two years from this time, we extracted all these teeth.

We would not dwell upon this subject, were it not that empirics are imposing upon community things which they know to be useless. The success of those ignorant impostors

and impudent empirics, the Crawcours,* last year, in this city with their "Royal Mineral Succedanium for plugging carious

* These swindling villains are said to have made a handsome fortune, in the short space of a few months, without conferring the least benefit on their dupes. They took good care to fill their *coffers* out of the *purses* of the good citizens of New York, (many of whom, by the by, are very fond of patronizing *foreign*, instead of *native merit*,) till compelled to flee the country, when they "returned to good old England to enjoy the yankee spoil."

We are acquainted with a respectable physician who actually allowed these fellows to remove gold plugging from his teeth, that they might be filled with the "Royal Mineral Succedanium."

"Credulity is a far greater source of error than superstition; for the latter must always be more limited in its influence, and can exist only, to any considerable extent, in the most ignorant portions of society; whereas the former diffuses itself through the minds of all classes, by which the rank and dignity of science is degraded, its valuable labors confounded with the vain pretentions of empiricism, and ignorance is enabled to claim for itself the prescriptive right of delivering oracles, amidst all the triumphs of truth, and the progress of philosophy."

"It is the love of simplicity, the marvelous and the fatal credulity of mankind, that have ever patronized empiricism; hence the effects of charms, incantations and amulets in the cure of diseases. A certain physician cured his patients, by administering to their immagination, a powerful and efficacious medicine, which, if they did not exactly follow his directions, would certainly kill them, but if they did, as certainly cure. This wonderful penacea was a bread pill. Pulverized rats skulls, were once celebrated in the cure of dyspepsia; vipers tails, baked toads, and the ossa triquetra, in the cure of epilepsy."

"Mystery is the very soul of empiricism; withdraw the veil and the confidence of the patient instantly languishes; thus Pliny, 'minus credunt quæ ad suam salutem pertinent, si intelligunt.' 'Patients have less faith in the efficacy of medicines administered to them, if they know what they are."—*Paris' Pharmacologia.*

While on the subject of empiricism, the reader will excuse a few observations, on what is termed by some, "the new practice of medicine," called Homœopathia. The following are the principles, on which homœopathic medicine is founded.

"1st. All simple drugs given to individuals in health produce in them, under all circumstances, certain definite morbid symptoms, which are termed drug-symptoms, and which are similar to the symptoms observable in certain corresponding natural diseases.

"2nd. The direct curative power of each simple drug, and of all medicines generally consists exactly and exclusively in the similarity of the symptoms of a natural disease to their corresponding drug-symptoms, or to those produced in healthy individuals, by administering certain simple drugs to them; so that all other operations of drugs are to be considered as capable only of admitting recovery indirectly, or by chance.

"3d. All natural substances, but especially all drugs, acquire by certain mechanical processes, certain medicinal power, so that any quantity

teeth, in a few moments, without the least pain, and thereby preserving them through life," illustrates the importance of

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of the substance or drug in question, however small, will always operate absolutely and unconditionally as an effectual remedy in its appropriate disease, by its specific power properly developed, which power or virtue, however, increases ad infinitum, in the direct ratio of the mechanical processes mentioned, and in the inverse ratio of the quantity of the substance."—*Lee-Wolf on Homœopathia, page* 61.

The following observations on homœopathia, which we transcribe from the Evening Star, July, 1835, are so apropos, that we beg to present them to the reader.

"Of all the stupendous humbugs that ever flourished and fattened upon the credulity of mankind, not excepting the mountebanks of the dark ages of alchemy and necromancy—not excepting the more modern impostors of Mesmer and his magnetism, Perkins and his tractors, and Hohenloe and his incantations,—the greatest by far is the famous *Samuel Hahnemann*, author of Homœopathia. For more than twenty years this indefatigable clamorous impostor under the imposing disguise of a more than ordinary share of erudition for persons of his stamp, has been struggling to make proselytes to the sublimated nonsense which he has from time to time published under the pedantic title of Homœopathia, and the still more audacious assumption of the sacred name of Bacon's immortal *Organon*. He has, the more effectually to dupe the unsuspecting, usurped this latter title to his crude and mystified dogmas, under the pretext that his discoveries and doctrines will effect an entire revolution in medical philosophy, and totally annihilate the "learned lumber" which has been accumulating from the pens of physicians since the first dawn of the science.

"Hahnemann, by a process of reasoning peculiar to himself, relies on the extreme minuteness of his doses,—infinitesimal quantities procured by excessive dilution and laborious trituration, or comminution of his medicaments into their ultimate atoms—the greater the subdivision, the greater the efficacy! A grain of tartar emetic dissolved in Lake Superior, would be infinitely more efficient than in 4 oz. of water, &c. So puerile a proposition strikes the plainest understanding as the very climax of stupidity, and its only good moral effect would be in eradicating the vile habit of eating medicine, practiced by old women and hypochondriacs, and in causing mankind to rely more on a proper regimen of diet, dress and exercise, rather than on dangerous mineral or vegetable poisons, placed in the hands of inexperienced adventurers. We shall not stop, however, to refute so ridiculous an hypothesis, nor enter into metaphysical disquisitions, as to the support it might obtain by deducing analogies from atomic affinities, as established by the late discoveries in chemical science. We do not wish to throw a veil or gloss over a system of incomprehensible and irreconcilable contradictions, the object of which, on the part of the author, has clearly been to mystify and dupe the understanding, and to plunder the pockets of his fellow creatures. We leave him to the remorse of his own conscience and the patronage of Queen Adelaide, and the other meddling and imbecile personages of royal and noble blood. But for a detailed and most profound and elaborate dissection of this preposterous humbug, we refer our readers triumphantly

this subject, by showing how fond we are of believing what we could wish to be true. Cements are kept by some of the

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to the erudite work of Dr. Leo-Wolf, whom we are proud to honor as a member of the profession, and whose admirable analysis of Hahnemann will redound to his honor, when the works of authors less unpretending will have been forgotten."

"Gambling," says the historian Gibbon, "is a natural propensity of man." It has not a more fasinating charm with the gamster, than has mystery with the credulous man, afflicted with any disease.

England has been termed "the paradise of quacks," we doubt if the term were not more applicable to our own country: for quacks in every department of the healing art are swarming the land; steam doctors, root doctors, Indian doctors, bone setters or doctors, and lastly tooth doctors.

We cannot look into a newspaper of the present day, without meeting with medical and quack advertisements, the most digusting to a man of sense, all held forth to the eager eyes of the afflicted, as panaceas, who, actuated by credulity or hope, grasp at them as a drowning man at a straw, and with as much advantage. "Doctor diet," "doctor quiet," and "doctor cheer," are the best physicians for the relief or cure of those diseases, for which patent medicines are taken by the afflicted; and without these, conjoined with wholsome exercise, all the medicines in the world can be of little use. "A quack is known by his advertisement." The thorough bred physician never offers a specific, for the cure of any disease, for he knows there are none. The administration of medicine in all chronic or organic diseases is of little advantage, unless accompanied with a strict regimen or diet. It is in the treatment of violent diseases, where the skill of the judicious physician is displayed. As the master of a ship, during a storm at sea, directs her guidance, so the physician, watching every symptom of the disease, endeavors to check, remove, or obviate the effects of all those that are unfavorable, till the storm abates.

The effects of change of diet, exercise, recreation, &c. are well illustrated by the following extracts from Paris' Pharmacologia:

"Let us then, before we decree the honors of a cure to a favorite medicine, carefully and candidly ascertain the exact circumstances under which it was exhibited, or we shall rapidly accumulate examples of the fallacies to which our art is exposed; what has been more common than to attribute to the efficacy of a mineral water, those fortunate changes of constitution that have entirely or in a great measure, arisen from salubrity of situation, hilarity of mind, exercise of body, and regularity of habits, which have incidentally accompanied its potation. Thus, the celebrated John Wesley, while he commemorates the triumph of 'Sulphur and Supplication,' over his bodily infirmity, forgets to appreciate the resuscitating influence of four months repose from his apostolic labors; and such is the disposition of the human mind to place confidence in the operation of mysterious agents, that we find him more disposed to attribute his cure to a brown paper plaister of egg and brimstone, than to Dr. Fothergill's salutary prescription of country air, rest, asses milk, and horse exercise. The ancient physicians duly appreciated the influence of such agents; their temples, like our watering places, were the resort of those whom medicine will not cure, and we are expressly told by Plutarch that these temples, especially that of Esculapius, were erected on elevated

apothecaries, and held forth by those interested in the sale of them as *specifics* " with which every person can plug his own

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spots, with the most congenial aspects; a circumstance which when aided by the invigorating effects of hope, by the diversions which the patient experienced in his journey, and perhaps by the exercise to which he had been unaccustomed, certainly performed many cures. It follows then, that in the recommendation of a *watering place*, something more than the composition of a mineral spring is to direct our choice,—the chemist will tell us, that the springs of Hampstead and Islington rival those of Tunbridge and Melvern, that the waters of Bagnigge Wells, as a chalybeate purgative, might supersede those of Cheltenham and Scarborough, and an invalid would frequent the spring in the vicinity of the Dog and Duck, in St. George's Fields, with as much advantage as the celebrated Spa at Leamington; but the physician is well aware that by the adoption of such advice, he would deprive his patient of those most powerful auxiliaries to which I have alluded, and above all, lose the advantages of the '*Medicina Mentis.*' On the other hand, the recommendation of change of air and habits will rarely inspire confidence, unless it be associated with some medicinal treatment; a truth which is more easy and satisfactory to elucidate and enforce by example than by precept—let the following story by Voltaire serve as an illustration.—'Ogul, a voluptuary who could be managed but with difficulty by his physician, on finding himself extremely ill from indolence and intemperance, requested advice:—'Eat a Basilisk, stewed in rose-water,' replied the physician. In vain did the slaves search for a *Basilisk*, until they met with Zadig, who, approaching Ogul, exclaimed, 'Behold that which thou desirest;' 'but my lord,' continued he, 'it is not to be eaten; all its virtues must enter through thy pores, I have therefore enclosed it in a little ball, blown up, and covered with a fine skin; thou must strike this ball with all they might, and I must strike it back again, for a considerable time, and by observing this regimen, and taking no other drink than rose-water for a few days, thou wilt see, and acknowledge the effect of my art.' The first day Ogul was out of breath, and thought he should have died from fatigue; the second he was less fatigued, and slept better: in eight days he recovered all his strength; Zadig then said to him, 'There is no such thing in nature as a Basilisk! but *thou hast taken exercise and been temperate, and hast therefore recovered thy health!*' But the medical practitioner may perhaps receive more satisfaction from a modern illustration; if so, the following anecdote, related by Sydenham, may not be unacceptable. This great physician having long attended a gentleman of fortune with little or no advantage, frankly avowed his inability to render him any farther service, adding at the same time, that there was a physician of the name of Robinson, at Inverness, who had distinguished himself by the performance of many remarkable cures of the same complaint as that under which his patient labored, and expressed a conviction that, if he applied to him, he would come back cured. This was too encouraging a proposal to be rejected; the gentleman received from Sydenham a statement of his case, with the necessary letter of introduction, and proceeded without delay to the place in question. On arriving at Inverness, and anxiously inquiring for the residence of Dr. Robinson, he found to his utter dismay and dis-

teeth, as well as to employ a dentist, and at a very trifling expense."

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appointment, that there was no physician of that name, nor ever had been in the memory of any person there. The gentleman returned, vowing eternal hostility to the peace of Sydenham; and on his arrival at home, instantly expressed his indignation at having been sent on a journey of so many hundred miles for no purpose. 'Well,' replies Sydenham, 'are you better in health?'—'Yes, I am quite well, but no thanks to you,'—'No,' says Sydenham, 'but you may thank Dr. Robinson for curing you. I wished to send you a journey with some object of interest in view; I knew it would be of service to you; in going you had Dr. Robinson and his wonderful cures in contemplation; and in returning, you were equally engaged in thinking of scolding me.'"

To show the effects of diet in the cure of a disease of very frequent occurrence in our city, *hæmoptysis* or bleeding at the lungs, we beg leave to mention a case, the subject of which was ourself: a desire that it may prove of use to others similarly affected, is our apology and only reason for relating it.

In the autumn of 1833, I caught a severe cold from exposure, the effects of which, I took little care to remove; depending on the soundness of my constitution, I left it to nature. On the first of January following, I had a violent attack of hæmoptysis. Knowing the danger of further delay, I took some medicines and put myself on a low diet, (bread and milk; a diet that I am fond of,) and continued it till the middle of March, when, feeling myself much better at the lungs, I returned to my old regimen. About the first of May, the bleeding from the lungs returned with redoubled vigor; so much so that I fainted: it continued at intervals for a fortnight, and reduced me very much. I again took to the bread and milk diet and continued it, occasionally changing it for a vegetable diet, upwards of a year, (during this time I ate no animal food,) when, finding every symptom of my old complaint subdued, I gradually returned to a "rational mode of living." Since this time, though living on "the fat of the land," I feel my lungs as sound as ever they were. The low diet subdued, or assisted nature very materially in subduing the chronic inflammation of the mucous membrane, lining the air tubes, which was the proximate cause of the disease.

I have recommended the above mode of living to two of my acquaintances, affected with hæmoptysis, who have followed it, and derived great benefit thereby.

The milk of the ass has long been celebrated for the cure of consumption. It is the diet and charm of novelty that have been beneficial—not that the milk of the ass is more efficacious than that of the cow, though it is richer; nor is it that milk possesses any medicinal quality. It is the diet; and any low diet, well managed, would prove equally efficacious.

Physicians are beginning to treat chronic diseases on a new method. Instead of feeding the slow flame with a stimulating diet, they *starve it out;* or subdue the chronic inflammation, by keeping the patient on a very low diet. There is no danger of persons dying from debility, induced by this diet. Nature is very provident; give her much, and she will endeavor to throw it off at waste gates; give her little, and she

"The temporary celebrity occasionally obtained by advertisers of cements, only attests the extreme disposition to gullibility of the public. Few things are more mortifying to the well informed practitioner, than to find his patients leaving him to place themselves under the care of one of these puffing pretenders of the day. The *fashion* for using cements will, like all others pass away, and the great number of unsuccessful cases will accelerate its progress to oblivion. It is an old complaint, and though old, unhappily not an obsolete one, that ignorant pretention, especially when wrapt in mystery, is more attractive to the million than modest ability.

"It is consoling however, to the respectable practitioner to know, that while empirical trickery may confer evanescent fame, sound scientific aquirement, is the only basis, or which can be founded a reputation solid, progressing and enduring."—*Snell, page* 158.

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will convert it all to the purpose of nutrition. In proof of this law, there are many cases on the records of medicine, of persons having lived on an astonishing small quantity of food for a long time; and again, of gormandizers whose rapacity food could no. satisfy.

A case is related in *les Anecdotes de Medicine*, of a French soldier, who is said to have eaten a whole quarter of beef in a single day: he used to contend with the dogs for the grocest food, and at length is supposed to have taken to cannibalism.

There are three kinds of diet, the *animal*, *vegito-animal* or milk, and the *vegetable*. The laboring man requires a stimulating diet or animal food, as the following anecdote illustrates.

Three or four years ago, the hue and cry was raised in New York, that the prisoners were being starved at Sing Sing. An inquiry was instituted, when it was ascertained that a liberal allowance of bread was given them, but less of beef. The diet was ordered to be changed; less bread given, and more of animal food, when the complaint ceased.

The man who leads a sedentary life requires a nourishing diet, but a less stimulating one, than the laboring man: hence he should partake largely of vegetable or *vegito-animal* food.

Nature kindly points out to man, the kinds of food best for him to partake of, in the different regions of the earth. Thus in the torrid regions, he has little appetite for animal food, but mostly repasts on the various productions of the earth. As we recede from the torrid towards the frozen regions, a more stimulating diet is required, and more of it. Thus the East Indians live on rice, fruit, &c. People of the temperate regions live both on animal and vegatable food: those of the frozen regions, mostly on animal food, as the Esquimaux, who live on train oil, the most gross of all kinds of food.

FILING THE TEETH.

Many persons, perhaps a majority of them, who have passed judgment in their own minds, on the practice of filing the teeth, are opposed to the use of the file for the removal of caries in order to arrest the disease, thinking that the enamel, which is considered the natural shield of them, is removed by the operation; and that the progress of the disease instead of being arrested, as is designed, is accelerated. And we are perfectly well aware of the circumstances which have given such currency to this opinion. It is founded on the effects observed to result from the practice of the hundreds of operators, who have assumed to practice and to discharge the duties of a profession, with which they were totally and culpably ignorant.

True it is, that the teeth have too often been injured and abused, by the practice of indiscriminate filing. We have ourselves, with regret, too often witnessed the mischievous effects of such practice to deny it. Yet mark us, it is only when the use of the file is *abused*, that such consequences follow; as when teeth perfectly sound are filed asunder, mearly because their sides are in contact, and from that circumstance may decay there; or, as when they are unskillfully, awkwardly and irregularly filed; or filed with a harsh

coarse file, which harrows up the bony structure of them, and they, being left in this state, unpolished, with a surface the best calculated possible for receiving and retaining foreign substances, and for converting them into a foul, putrescent and acrimonious mass, of all things, the most favorable for the production of decay, do continue to decay; or again, when they are filed for the removal of caries without accomplishing its entire removal, and are left in that exposed state, when instead of being imperfectly filed, they should have been perfectly prepared and plugged. But we trust that the *abuse* of any mode of practice, of any instrument, or of any principle, will not militate against its wholesome, judicious and approved application; for if so, what instrument, invention, system, or institution may not be discarded?

We have precisely the same ideas in relation to the use of the file, when it is injudiciously employed, as those have, who do not discriminate between its proper application and its abuse; yet we are bold to affirm, that its employment in the hands of a skillful dentist, is a most efficient and sure means of removing and arresting incipient decay of the teeth; and as thus employed, is approved by the best dentists of the age.

Some dentists are in the habit of separating the front teeth when perfectly sound, to prevent decay. We totally discard this practice. It is, as if a man should submit to take a nauseating dose of medicine, while in perfect health, merely because there was a liability to sickness with him, at some future time. Preposterous! leave health *unphysiced*, and sound teeth unfiled. It is quite in time to tamper with the disease, and to dabble with the remedies, after the former has made its appearance:—"Sufficient unto the day, is the evil thereof."

Finally, upon this subject, we would advise adherence to the following maxims:

First—Never file a tooth, except disease justify the use of the file.

Second—Consider filing a less evil than disease, and consequently to be preferred to it.

Third—Never to file a tooth for the removal of caries, unless by so doing, you can extirpate the disease effectually, and that too, without too great a sacrifice of the substance of the tooth, and at the same time, do not injure the chance for the operation of plugging, should circumstances subsequently require it.

Fourth—Do not file a tooth that can be better, and more effectually treated by plugging.

After the observance of these rules, we would strenuously recommend the use of the file, as soon as the least appearance of caries can be detected; indeed, then is the appropriate time to use it, even while the enamel is becoming discolored, rough and disorganized; and the depth to which the file is to be carried, must be regulated strictly according to the above rules and the progress of the disease. In our humble opinion, the file is not generally used early enough, to obtain the greatest possible benefit from its use in arresting decay; for we believe, that by a timely and judicious use of it, incipient decay of the front and of the small double teeth, may, in the greatest number of instances, be completely arrested.

To the above directions for filing the teeth, there is however one exception; and that is when a tooth by being in contiguity with another that has been long carious, acquires by such exposure, a discoloration of its enamel on the side exposed, which may be either brown or of a very black hue, without any apparent derangement of its structure, which occurrence often happens. If, on examination of a tooth thus circumstanced, its surface be found smooth and not broken in upon, no matter however much discolored it may be, it should not be filed; indeed, no smooth or polished surface of a tooth should ever be filed: obtain and preserve a smooth surface, and you have nothing to apprehend from external decay, even though the enamel were removed; indeed, this is the grand secret for the preservation of the teeth.

It should be borne in mind, that the above rules and directions for filing the teeth, are given where filing is to be prac-

ticed for the cure or arrest of incipient decay, and not for preparing the tooth for plugging.

Reasons which justify us in recommending the use of the file, in the strongest manner, for the above purpose.

First—The necessity for the separation of the teeth is indicated by the circumstances under which they are most liable to decay, which have been mentioned under the head of caries, and need not be repeated here.

Second—If it be objected, that the enamel is cut away by the process, the objection is not valid, for the enamel will be found to be already destroyed, or so much disorganized as to be useless and even injurious to the subjacent portion of the tooth.

Third—If again it be objected, that the bony portion of the tooth is exposed by the practice, the same remarks will apply as in the case above; for its destruction will inevitably follow, if left to the ravages of the disease; and with the most unfavorable result, the discase will be retarded; and in most favorable, completely arrested: and further, if even under the former supposition, they do go on to decay, so as subsequently to require plugging, before the disease is entirely arrested, yet, the operation is not futile, as it will only be anticipating what must be done preparatory to filling: hence, the chance of arresting the disease by filing, which is certainly very great, is an expenseless acquisition, can do no harm, and will, in a great number of instances, save a vast deal of trouble, vexation, pain, and expense.

Fourth—No objection ought to be made to the practice, on plea of disfigurement of the teeth, for if the operation be skillfully performed, this result will not accompany or follow it.

The following is an important position, as it shows what may be done for the arrest of incipient decay, by the judicious use of the file.

The bone of well formed teeth, (or teeth whose structure is compact) exposed in a healthy mouth, the secretions of which are not vitiated or acrid, does not decay, unless neglected, or in a

situation which favors the lodgement, retention and chemical action of foreign matter upon it.

Proof.—Savage nations file their front teeth into various shapes without inducing decay. Some negro nations on the western coast of Africa, and the Abyssinians file off the corners of the *incisores* in both jaws, so as to make them pointed, like the teeth of a saw. The Malay Indians file the *incisores* across their anterior surface, so as to give them the appearance of being fluted. These are convincing proofs that the mere filing of the teeth does not cause them to decay.

The following cases, which we select from our notes, are positive proofs of *our position*, and show the great advantages to be derived from the judicious use of the file.

CASE I.

October, 1833, called on us for professional services, Mr. J. C. Forty years ago, the *incisor* teeth of the upper jaw being in a state of decay, were separated with a thin file, and the disease completely cut out from their inner surfaces, by the celebrated Joseph Fox, in London. They have not decayed in the least since, nor would an observer suspect that they had ever been operated upon.

CASE II.

November, 1834, examined the mouth of Mr. W. two *molares*, three *bicuspides*, one *cuspidatus*, and two *incisores* were filed ten years ago, for the cure of decay, by Mr. Cartwright, of London, the most celebrated dentist in Europe. More than one third of some of these teeth were filed away. The disease has not made any further progress since the operation.

CASE III.

November, 1834, plugged some teeth for Miss S. In 1827, the *incisores*, *cuspidati* and some of the *bicuspides*, being much decayed, were freely separated, and the disease cut away

from the inner surfaces of the *incisores* by the gentleman mentioned in case II. This case is remarkable, for near one half the substance of the crowns of some of the teeth were cut away; notwithstanding, the disease was cured, and the teeth are still sound though much disfigured.

CASE IV.

September, 1835, rendered professional aid to Col. C. In 1817, his front *incisores* of the upper jaw, were filed asunder for the cure of decay. They remain perfectly sound to this day.

"The operation of plugging decayed teeth is the principal curative means in the hands of the dental surgeon. There are, however, other remedies of equal efficacy, if judiciously applied. Such are filing, cutting, or the complete removal of the diseased parts of the bony structure by the file, or other suitable cutting instruments, so as to produce a regular and sound surface of the tooth, by which its health is preserved." —*Koecker, page* 407.

"When the file is skillfully used, in the early stage of decay, it is one of the most valuable instruments in the *boutique* of the dentist, with which to arrest the further progress of the disease."—*Snell, page* 133.

"The application of the file to the teeth, is considered by some persons, as one of the most injurious practices which can be performed; they think that the decay of the tooth will certainly follow the removal of the least portion of the enamel.

"The only plan that promises success in the cure of the decay of the front teeth, is to remove the carious part from that which is sound, with the expectation that the disease will thereby be stopped. This theory is justified by the success of the practice, whenever it is adopted, before the caries has reached the internal cavity."—*Fox's Natural History of the Teeth, part II, page* 143.

In refering to the above quotation from Mr. Fox, it should be recollected that at the time he wrote, dental surgery was in its infant state, the operation of plugging little known, and not praeticed with that suceess, whieh attends the operation of seientifie dentists of the present day.

"As soon as it is discovered, or even suspected that the *incisor* teeth begin to decay, they should be separated without loss of time, and the diseased parts cut away."—*Gerbeaux, page* 75.

The opinions of dentists with respeet to the use of the file differ very mueh, some extolling it, and others eondemning it; but the propriety of its use, under the eireumstanees we are treating of, eannot be doubted. It is eertain, that the separation of the teeth and the extirpation of the decay with eutting instruments will not arrest its progress in all eases, though it will retard it greatly, by preventing the lodgement and retention of the eauses of the disease, espccially if carc be taken to keep them clean.

The sceretions of the mouth, in some individuals possess, the property of aeting chemieally on the teeth; and the teeth of such persons will eontinue to deeay in spite of art. Hence in the teeth of one person, separated for the eure of deeay, the disease still progresses, while in another, it is effectually arrested.

That the progress of incipient deeay is not always arrested by the use of filing and eutting instruments, is no argument against their employment; for reasons before mentioned. (See page 130.)

We have dwelt longer on this subject than we intended, but we wished to aduce faets and arguments enough to remove the strong and unfounded prejudiees, whieh most persons have against the use of the file; for we believe that wonders may be effeeted with this instrument, in the eure of incipient earies, if early and judieiously employed.

The proper time for employing the file, in order that the greatest possible benefit may be derived to the patient by its

use, is as soon as the teeth exhibit the least symptom of incipient decay.

The symptoms which indicate the separation of the teeth are a rough, discolored or decomposing state of the enamel, marked by a brown or bluish spot, seen between the teeth, which cannot be removed by means of polishing materials.

MANNER OF PERFORMING THE OPERATION.

The dentist has a great variety of files for the above use; some flat of various thicknesses, smooth on one or both sides, or rough on both; others half round, oval or beveling,

The front teeth should be separated with a flat file, never so thick as to disfigure them, and the separation should be effected by cutting most off from the tooth most injured. The file should not be caried quite to the gum, but a small projection left on either tooth to prevent their aproximation, otherwise the object of separation will be defeated. If the file does not completely remove the decay, it should be extirpated with cutting instruments from the inner surfaces of the teeth.

The *bicuspides* should be freely separated, the separation wider at their grinding surfaces than near the gum, and the projection must always be left on these teeth, or they will certainly approximate and aggravate the case: different kinds of files are used for this purpose. The above observations are equally applicable to the *molares*, under similar circumstances.

All the teeth are frequently attacked by decay on the external sides near the gum, especially if neglected; a small round file, or cutting instruments are proper for its extirpation, if deemed advisable.

The above directions apply only to the proper method of using the file, to arrest the progress of incipient decay. When the disease has made further progress, it is a matter of consideration important to the patient, whether to file and cut away the decay, or fit the cavity and plug it; for if the disease progress still further, the teeth cannot be plugged afterwards, on

account of the impossibility of making a cavity that will properly retain the plugging; hence the teeth must be lost. As a general rule, it is safest and best to plug any tooth, in which decay has so far progressed as to form a cavity sufficient to retain a plug. If the decay be spread over an extensive surface and be superfical, it should be filed away. Before proceeding to either operation, the constitutional formation or structure of the teeth or their predisposition to decay, the state of the general system, of the digestive organs, and of the secretions of the mouth, should be duly taken into consideration. No precise or definite rules can be given, on account of the great variety of position, in which the teeth decay, the progress of the disease, and the circumstances under which it occurs. The operation must be left to the judgment of the judicious dentist.

The filing of the teeth is a very nice operation, requires great mechanical tact and skill, as well as judgment. We have often seen the teeth horribly mangled, cut, notched and disfigured, by careless, ignorant or incompetent operators.

"The method of using the file, in separating teeth, requires the most careful attention. I have frequently seen teeth, after they have been separated by some careless operator, that have made me feel ashamed of my profession. The file is often used in the most awkward and crooked manner."—*Snell, page* 136.

Sometimes it is not necessary or advisable to separate decaying teeth, but open them on the inner side and plug them. This however depends on circumstances. The judicious dentist must decide upon the proper treatment.

SCURVY IN THE GUMS.

Scurvy in the gums is a local inflammation of that part of the gum surrounding the necks of the teeth and their fangs, which, if not arrested, gradually extends to the sockets of the teeth.

It is a disease of frequent occurrence, and often very deplorable in its consequences, causing the loss of whole sets of beautiful and sound teeth, seriously affecting the constitution, and thereby producing much distress.

The disease has been termed *scurvy in the gums*, from its having formerly been supposed to be analogous to the *sea scurvy*. It may be proper to mention for the satisfaction of persons of nice feelings, afflicted with this malady, that it is seldom if ever, that it has any analogy to that disease, as it falls under the observation of the dentist; but, as the disease in question has long been known under its present appellation, it is best to retain it.

There are two distinct species of this disease, though this division is not made by writers on the teeth. The first species is wholly the result of local causes, and may be properly termed *simple*. The second species depends both on constitu-

tional and local causes, and may be termed *complicated.* The treatment of the former is local, but the cure of the latter requires both constitutional and local treatment.

These species have not been sufficiently distinguished by dental authors; therefore, they generally lay to much stress upon constitutional *causes;* for ninety cases in the hundred have little to do with the constitution, as far as the causes of the disease are concerned, these being mostly local, as neglect, tartar, dead roots, &c.

Scurvy in the gums attacks persons of all ages and conditions,* though most frequently the hearty and robust, after the age of puberty. Old persons, who have been so lucky as not to have lost their teeth by decay, generally lose them by this disease, if they lose them at all; their teeth dropping out perfectly sound. It generally first attacks the *incisores* of the lower jaw, and the *molares* of the upper, because tartar is most apt to collect about these teeth, from the proximity of them to the salivary ducts. The disease gradually extends to the periosteum and sockets of the teeth, causing their gradual absorption, and deposition of bony matter takes place at the bottom of the sockets, which gradually protrudes the teeth, till at length they drop out one after another, pefectly sound, till the patient is rendered edentiless.

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* "Persons of robust constitutions are much more liable to this affection of the gums, than those of delicate habits; and it shows itself in its worst forms oftener after the age of thirty, than at an earlier period. The teeth of such persons are generally perfectly sound, or very little affected with caries, though I have occasionally met with exceptions to this observation.

"The lower classes are particularly subject to this affection; and not even those country people who enjoy uninterrupted good health, and the influence of the most salubrious atmosphere, and who have originally the most beautiful and healthy teeth, are altogether free from its attacks.

"This disease seems to be confined to no particular climate, and is more or less prevalent in every part of the world: I have observed the inhabitants of the most apposite countries, the Russians, the Germans, the French, the Italians, the Spaniards, the Portuguese, the English, the Africans, the East and the West Indians, and the inhabitants of the United States, to be all more or less liable to it."—*Koecker, pages 272 and 273.*

Symptoms.—Scurvy in the gums is often very insidious in its first attacks, and may continue and progress for a long time without being discovered by the patient. The local inflammation, if it be not checked, goes on to suppuration, and purulent matter constantly oozes out from the gum surrounding the necks of the teeth, and mixing with the saliva, may be discharged for a great length of time without detection. At length the gums become turgid, spongy and painful, bleeding on the slightest touch; their color is generally very much depened, and of a purple hue. If the disease be now neglected, all the symptoms gradually become agravated; the irritation extends to the periosteum and sockets, occasioning them to participate in the disease, when they are gradually absorbed; the teeth grow loose, and continue to become more so; a deposition of bony matter takes place at the bottom of the sockets, which protrudes the teeth, till they fall out of the mouth, one after another, often perfectly sound, untill the whole are lost.

Causes.—The causes of the simple species of the disease are local, though certain conditions of the system may predispose to it: these are every kind of foreign matter collected about the teeth, especially tartar, which insinuates itself deeply between the gum and necks of the teeth, causing their separation. Dead teeth and stumps are equally productive of this disease—improper operations upon the teeth—uncleanliness of the mouth, especially during illness or a febrile state of the system.

The above are the exciting causes of that species of the disease, which we term *simple:* the exciting causes of the second species or the *complicated*, are the same; but the remote or predisposing causes, are a particular state of the constitution, as scrofulous or scorbutic taints of the system; that state of the system, which is induced by the profuse administration of mecurial medicines; fevers, or diseases of the general system; a plathoric state of the system; a peculiar irritability of the system, as is seen in those cases, where the disease attacks children, and that state of the system, which is induced by

debauchery, intemperance, &c. This species of the disease is more rapid in its course of destruction than the former, more distressing, and more difficult of cure.

Dental writers, in our humble opinion, have laid too much importance on the remote or constitutional causes of the disease; in most cases, the constitution has little to do with it; for the healthy and mostrobust are said to be most subject to its ravages. Mr. Koecker says, that he has never seen the disease without a deposite of tartar upon the teeth, and that this has been its immediate cause. This opinion is further confirmed by the facts, that healthy persons, who keep their teeth free of the exciting causes of the disease, or free of tartar and every species of foreign matter, and whose teeth are sound, either naturally, or rendered so artificially, are never troubled by the disease in question, while those who neglect their teeth, are very liable to it; also, that people in the lower walks of life are the most subject to scurvy in the gum, because they totally neglect their teeth. It is seldom that an aged plebian is seen with teeth. We have never seen a single instance of this disease, in a healthy person, either in the higher or lower walks of life, that was not wholly produced by local causes. The disease being cured, in such cases, by local treatment, also shows that its causes are local.

Scurvy in the gum, in its early stages, is seldom attended with much pain, but as the disease advances, the pain is often considerable, and the constitutional irritation very great, though the patient or his medical attendant seldom attribute this excitement to its true cause; the state of the mouth being considered as the *effect* of the constitutional derangement, instead of the *cause* of their derangement.

*Method of Cure.**—The indications of cure in the first or

* "I have always succeeded in curing this disease in all its different stages by the mode of treatment, which I am now about to describe.

"It consists, first, in checking the diseased action which has become habitual, and in producing a general healthy disposition in the diseased parts, and those connected with them, by removing the actual causes; and, secondly, in preventing their occurrence.

simple species of scurvy in the gum, are the removal of the local causes of the disease. In the second or *complicated* species, the indications are the removal of both constitutional and local causes.

All writers on the teeth agree, that scurvy in the gum may be easily cured by proper treatment, especially, in the early stages of the disease; that to effect this object, requires prompt, decided and judicious treatment; that the practitioner

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"Every tooth which has lost its vitality, including all stumps, and all such teeth as from their irregular situation or direction excite a mechanical irritation, provided this irregularity cannot be remedied by filing, or by cutting away the irritating parts, should also be removed.

"All operations should be performed with the greatest judgement and caution, and all teeth to be removed must be extracted at the same sitting, because it would either partly or altogether obviate the desired effects, if this particular operation were performed at different times. This advice is the result of much experience, and should, if possible, be always adopted to ensure a successful cure.

"The bleeding from the sockets should be encouraged by warm water taken into the mouth at short intervals, during the different operations, and continued for some time; as its effects are of much importance.

"A gentle astringent wash may be subsequently employed for several days. I have generally found the following simple preparations the most useful.

"Take of clarified honey, three ounces, and of vinegar, one ounce. This, diluted in the proportion of three table spoonfuls to a pint of warm sage tea, or water, may be used frequently during the day.

"Take of clarified honey and of the tincture of bark, two ounces each. Mix and dilute as above.

"Take of honey and of the tincture of myrrh, two ounces each. Mix and use as above.

"Take of honey and of the tincture of rhatania, two ounces each. Mix and dilute as above.

"Take of honey and of the tincture of catechu, once ounce each. Mix, dilute, and use as above.

"In about ten or fourteen days after the removal of the teeth, the inflammation considerably subsides, the gums assumes a more healthy appearance, and the teeth become firm in their sockets.

"The tartar should now be removed; but there is often much difficulty in doing this well. It adheres so firmly to the necks or roots of the teeth, which are generally loose, and it is attached so closely to the alveolar processes, and is in many cases so covered by the edges of the gums, and so hidden between the teeth, that it is not without the utmost care that we are able to avoid irritating the gums and periosteum with the instruments employed. The operation, on this account, is to be performed with great caution and tenderness, in order to effect a perfect removal of the tartar without making the teeth still looser."—*Koecker, pages* 288 *and* 289.

must perfectly understand the disease he is about to treat, or he will only agravate it; and that the fancy of the patient is not to govern his treatment.

The first step recommended by dental writers of repute, in the treatment of this disease, is the extraction of the dead teeth and stumps, if there be any in the mouth; and then, after a few days, they recommend the teeth to be scaled, or freed of tartar and other foreign matter. With all due respect to their opinions, we beg leave to differ from them somewhat in this matter.

We always make it our rule, first to cleanse the teeth in the most perfect manner, if circumstances will permit. Sometimes, however, when the necks of the teeth are exquisitely sensitive, (which is not often the case,) the operation may not be so perfectly performed, but great care should be taken to remove every particle of tartar adhering to the necks of the teeth, under the gums. This is an important point, and is one great reason why some operators fail in their attempts to cure the disease.

The next step, is the removal of every dead tooth and stump, and every carious tooth which cannot be cured, from the mouth. This being performed, all the local causes are removed and will be attended with the most beneficial results. Another advantage gained is that the patient during this operation, loses somewhat of the dread of the more formidable operation of extraction. If the teeth are not first scaled, before the extraction of the teeth, one grand cause of the disease still remains, and it cannot be cured till this is removed, consequently the cure is needlessly very much delayed. The local causes of the disease should always be removed at one sitting, if the patient can well bear it; then, after a few days, a very remarkable improvement will have taken place.

During, and after the operations, the bleeding should be encouraged by rincing the mouth frequently with warm water.

There is much diversity opinion among dentists, as to the

after treatment of the disease. Some recommend the gums to be often scarified, the mouth frequently rinced during the day, with strong stimulating tinctures or washes, and the teeth brushed morning and evening with a very stiff brush and an astringent tooth powder: others recommend mild washes and soft tooth brushes: each considers the treatment opposed to his views, as injurious. These opinions have arisen from the circumstance, that their authors have not discriminated the different states or conditions of the disease; whether the inflammation be healthy or unhealthy.

The proper treatment is clearly pointed out by the surgeon's treatment of ulcers: to healthy ones, he applies simple dressings, and leaves the rest to nature: to those that are unhealthy and want action, he applies severe friction, stimulating or acrid washes or powders. So should scurvy in the gum be treated. After the removal of its causes, if the disease takes on a healthy action, as it generally does, mild washes, as those recommended by Mr. Koecker, and a soft tooth brush and a mildly astringent tooth powder, (see subject of tooth powders,) are all that are required or proper. On the other hand, when there continues unhealthy action, as indicated by swollen and spongy gums, bleeding easily, and of a livid color, which do not adhere about the necks of the teeth, scarifications, stimulating tinctures, a stiff brush, and a more powerful tooth powder are to be used. Under these circumstances the gums should be scarified, by passing a lancet freely between the teeth, to relieve the turged vessels of stagnant blood. Dr. Fitch recommends a decoction of white oak bark as an astringent wash. It is a very good one. A decoction of nutgalls is equally good, and at the command of every one. Mr. Fox recommends, (and the practice is sanctioned by others,) a solution of the nitrate of silver to be applied to the gums, with a camel's hair pencil, when they continue of a livid color and spongy texture; it is an excellent remedy.

When the local causes of the disease have been removed,

great care should be taken to keep the teeth clean; and on no account should the re-accumulation of tartar be permitted. A soft or hard tooth brush, and a mild or strong astringent in the tooth powder, should be used morning and evening, according to circumstances, also, mild or stimulating washes occasionally throughout the day. Mr. Snell recommended camphorated liniment to be applied to the diseased gums: we consider it to be one of the most useful remedies that can be used, and often prescribe it: it can be applied with a camel's hair pencil or with the finger. If the teeth be brushed after every meal with a soft brush and castile soap, the cure will be facilitated; it will also render the mouth delightfully sweet and clean.

In the *complicated* species of scurvy in the gum, it is necessary to administer internal medicines for the removal of those states of the system, enumerated as the predisposing causes of the disease, in conjunction with the local treatment.*

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* In order to show the effect which this disease occasionally has upon the general system, and also the proper treatment of it, we mention two or three cases. The following is from Mr. Koecker:

"Mr. J———, a gentleman of great respectability, a native of this country, but for many years a resident of Smyrna, aged about thirty-nine, had suffered upwards of ten years from this distressing malady, attending by all its torturing symptoms, in a most unparralleled manner. His whole constitution, but particularly the glandular system, was so much affected as to produce swellings and indurations in the most distant parts, accompanied with great pain and inconvenience; but its effects on his head were frequently agonizing; indeed, he assured me, that so great were his sufferings, that he had been driven so far to despair, as to implore Heaven to relieve him by putting an end to his miserable existence. He repeatedly applied for the best medical and surgical advice that the country could afford; but the real causes of his sufferings were not detected; and such was the character of this disorder, that it baffled every exertion and all the remedies which were applied for many years. At length the effects of a sea voyage and a visit to his native country were proposed, and at the same time a trial of such remedial measures as he might be able to command in England.

"Immediately on his arrival in London, this patient consulted Mr. Lawrence. This sagacious and disinterested surgeon soon suspected his teeth to be the chief cause of his malady, and recommended him to have my advice without delay, and to submit to any treatment I should deem necessary and proper.

"On examining the gentleman's mouth I found his gums and all his

Reflections.—It is seen that scurvy in the gum is generally produced by local causes, often, very often, wholly the effect of neglect, and that it is a disease easily cured.

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alveolar processes more or less diseased. His double teeth, however, had most especially suffered: and so considerable a part of their sockets was destroyed, that their preservation was rendered altogether impossible. I therefore proposed their immediate removal; and, although the gentleman was exceedingly nervous, he acceded to my proposed plan of cure without the least hesitation.

"February 14th, 1826. Thirteen roots and teeth were extracted, and the mouth was subsequently cleansed with a gentle stimulant lotion every hour or two in the course of the day.

"February 21st. The remaining front teeth of the upper and under jaw were carefully sealed as far as the diseased state of their gums would allow of, and the patient provided with the means of preventing the re-accumulation of tartar. He was requested to continue the use of the lotion.

"February 28th. The above operation was repeated, and cleanliness particularly recommended.

"March 7th. The same operation was completed, and a perfect removal of the tartar was accomplished: the patient was also directed to proceed as before.

"Thus by the judicious management of the case by Mr. Lawrence, and the above treatment, the patient was now, in less than one month, restored to perfect constitutional health. His mouth was rapidly recovering from a disease, probably of more than fifteen years standing; and the most important of his teeth were saved from total destruction, and permanently preserved."

October, 1832. Consulted by Mrs. ———, she stated that her teeth and mouth were in a wretched condition—that she had suffered infinitely from tooth ache, pain in her jaws, face and temples, and was still suffering as much—that her health was much impaired—that the medicines prescribed for her proved of little advantage—that she had spent some months on the sea shore for the benefit of sea air, bathing, &c.; but that her health had not improved so much as she had been led to expect by her physician—that she had often thought her teeth to be the cause of her sufferings, but that she had never been able to make up her mind to have any thing done to them, &c.

On examining her mouth, we found that every *molar* tooth was so much decayed that nothing could be done for their preservation, the crowns of some of them being entirely destroyed, the dead roots remaining. The four *incisores* and the four *bicuspides* of the upper jaw, were all more or less decayed. The eye teeth were sound. The posterior *bicuspides* of the lower jaw were also decaying. Her gums, as she truly said, were in a wretched condition, much swollen, loose and spongy and bleeding on the slightest touch, and on pressing them with the finger, puriform and bloody matter issued from about the necks of the teeth, which were incrusted with large quantities of tartar: she had not been able to use her brush for a long time on account of the soreness of the gums. Her breath was exceedingly offensive.

When we reflect how many beautiful and sound teeth are lost by this disease, and how much local and constitutional

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We gave it as our opinion, that her ill health was principally caused by the state of her mouth, and explained to her the reasons on which this opinion was founded. She readily consented to have any operations performed which might be deemed proper.

To be brief: the tartar and foreign matter were first removed from her teeth in the most perfect manner: this was as much as she could bear to have done the first day; on the second day the dead teeth and roots were removed from the upper jaw; and on the third from the lower, making in all, twelve. She was furnished with the necessary washes, brushes and powders, with proper directions. Within three weeks from this time, the disease in the gums and sockets was completely cured, and her general health improving. The carious teeth were now plugged,—the nerves of three of which had been destroyed by means of arsenic. Two years afterwards, we saw this lady enjoying good health and her mouth perfectly well.

Reflections.—Is it probable that diseased teeth, gums and sockets do ever seriously affect the general system?

The sympathy existing between the teeth and their relative parts, and between these and the general system is very great, in consequence of which, (see the reasons pages 17, the intimate connexion existing between the dental and facial nerves, and those of the general system, by means of the great sympathetic nerve,) when disease is going on in the mouth, it becomes sympathetically affected in a greater degree, than it does from disease of equal extent in any other part, where vital organs are not engaged. Every one is familiar with the violent constitutional derangement which so frequently results from tooth ache, ague in the face or gum-biles; we have seen many cases where persons have been confined a week or ten days by these affections.

Again, the imperfect manner in which the food is masticated when the mouth is very much diseased, and the morbid matter which is mixed with the food and carried to the stomach, cannot but have a tendency to derange the functions of digestion. For further opinions on this subject, see "effects of diseased teeth, gums and sockets, upon the general system."

The two following cases, will show the usual causes of scurvy in the gum, and its effects, the necessity of thorough operation for its cure, and the impropriety of patients dictating the plan of treatment.

September, 1833. Mr. V ———, a gentleman of a robust and healthy constitution, laboring under this disease consulted us, stating that he had long been suffering under an affection of the gums, had neglected so long to apply for assistance, that he feared little could be done for him.

On examining his mouth, we found the disease had made sad ravages. The teeth were much incrusted with tartar, especially the *incisores* of the lower, and the *molares* of the upper jaw. The gum and alveoli of the *incisores* and *bicuspides* of the upper jaw were considerably diseased, and so much absorbed that these teeth appeared much longer than natural. The gum and sockets had fallen away so much from the four anterior *molar* teeth of the same jaw, and these teeth had so much pro-

suffering it often occasions, we cannot but regret that a disease so perfectly under our control, should be so often permitted to make such sad inroads upon our health, our personal appearance, and our comfort, as though the thousand ills, to which man is heir, and which he cannot foresee or prevent, were not enough to consummate his misfortunes.

Notwithstanding, there are many who neglect to pay attention to the disease, either in the hope of spontaneous relief or from the fear of painful operations, till compelled to seek relief, when too often the disease has made such progress that many teeth are inevitably lost, and others much injured and more liable to future disease. It is in the power of every healthy person, to keep his mouth free of the local causes of the disease, which are also, the grand causes of external caries of the

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truded, that nothing could preserve them. The two anterior *molares* of the lower jaw had been extracted, and the crowns of the second were decayed away. The *bicuspides* and canine teeth were sound and firm in their sockets, but the *incisor* teeth were very much protruded and quite loose. We gave it as our opinion, that this disease could be perfectly cured, but that it would be necessary to extract the four *incisores*, the roots of the decayed *molar* teeth of the lower jaw, and the four *molar* teeth of the upper jaw. He would not allow the *incisores* to be removed, but would submit to any other operations that might be deemed necessary. His teeth were scaled in the most perfect manner, and the *molar* teeth and stumps extracted, and the gums scarified between all the other teeth, to relieve the turged vessels and induce a new action. Our patient was furnished with an astringent lotion, (decoction of oak bark,) and tooth powder. In a few days he returned when we found a great improvement in the state of his mouth. The gums were again scarified, though not so extensively as before, and he continued the use of the lotion. In four weeks from the time of the first operation, every part of the mouth, except the *incisor* teeth of the lower jaw, was perfectly restored to health; but here the disease continued in spite of every effort till the teeth were removed.

June, 1832. Consulted by Mrs. ———, found her teeth covered with large quantities of tartar—the gums much diseased and so sore that she had not been able to use her brush for a long time. The crowns of most of the *molares* had decayed away even with the gums. She had suffered very much. Her teeth were carefully cleansed, every dead tooth removed, which soon restored her gums to health. The *incisores* of the upper jaw being much decayed, also three *bicuspides*, were plugged. She has not been troubled with her teeth since these operations.

teeth; and he who does this, consults his health and comfort, as well as his purse. It is much better to prevent disease of any kind, if this can be done, than to cure it. It is also vastly better and easier to cure disease in its early, than in its advanced stages.

SALIVARY CALCULUS

OR

TARTAR OF THE TEETH.

Tartar of the teeth is an accumulation of calcarious or earthy matter about the teeth: it is principally composed of phosphate of lime and animal matter, and is secreted with the saliva, or, it rather enters into the composition of this fluid, and is deposited in layers about the teeth: it often collects in great quantities if means be not used to prevent its accumulation, so much so, that it occasionally incrusts the teeth, especially if a tender tooth, prevent mastication on one side of the mouth. There are cases on record of this substance having collected in such quantities, as to occasion prominences in the cheek like tumors: we have seen two or three like cases: we have also seen a piece of tartar half the size of a hen's egg.

Tartar is most apt to collect on the external side of the *molares* of the upper jaw, and on the inner side of the *incisores* of the lower, because the salivary ducts enter the mouth at

these points: it occasionally obstructs these ducts, so as to produce ranula, or a swelling caused by the accumulation of the saliva.

Almost every person is subject to the formation of tartar, in a greater or less degree: in some, this disposition is so great that the teeth cannot be kept clean and free of it, without the frequent use of a proper tooth brush and dentifrice; in others it is so small that little attention is required.

The formation of tartar is much influenced by the state of the system. During the continuance of any febrile disease, the secretory organs of the whole body are deranged and do not perform their functions as in health; the mouth and teeth often become loaded with a thick fur, or inspissated mucus of a yellowish or brown color; the mouth tastes extremely disagreeable to the patient himself, and his breath is very offensive to those in attendance: under such circumstances, nothing is more delightful to the patient than to have the mouth cleansed: some physicians recommend solutions of the mineral acids for this purpose; but the use of such remedies must prove very injurious to the teeth, and therefore should never be used.

When the tartar is first secreted, it is quite soft like slime, and may now easily be removed with a tooth brush and powder, but if neglected, it soon becomes concrete and hard. Most persons, if they will observe when they rise in the morning after sleep, will find their teeth more or less covered with a viscid yellowish mucus; this is tartar, which, if not removed by the daily use of the tooth brush, will adhere about those parts of them, not subject to friction during mastication, and in time collect in large quantities.

Tartar is of a yellowish or buff color, especially that which collects about the *molares*; that which is seen about the *incisores* is often of a brown color. The deposition of this substance cannot be prevented by any medicines, as it depends upon the state of the saliva; but its accumulation may generally be very easily prevented by carefully brushing and washing the teeth every morning.

EFFECTS OF TARTAR.*

Tartar is one of the most injurious agents to which the teeth are exposed; it is also the grand cause of the disease in the gums and sockets, called scurvy in the gum. Mr. Koeck-

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* "There are parts of the teeth which lie out of the way of friction, viz. the angles made by two teeth, and the small indentations made between the teeth and the gum.

"Into these places the juices of the mouth are forced, and there stagnate and deposite a quantity of calcarious matter, which is dissolved in them, and which is separated from them by exposure, giving the teeth the appearance of being stained or dirty. If art be not now used, the incrustation increasing covers more and more the teeth. When it has increased so much as to touch the gum, (which very soon happens, especially at the angles between the teeth,) it produces ulceration of that part, and a train of bad consequences. Often the gums receding from this matter, become very tender and subject to hemmorrhage.

"The sockets frequently take part with the gums, ulcerate and become absorbed; so that the teeth are left without support and drop out."—*Hunter, page* 192.

"Tartar is one of the most frequent causes of the diseases of the teeth. It acts directly chemically in the destruction of them; whilst, by its mechanical and irritating influence, it is rendered indirectly more destructive to them, it being one of the most powerful causes of the diseases in the gums, periosteum, and the alveoli.

"I have seen instances in which whole sets of teeth, of which the greatest number were perfectly sound, drop out one after another in consequence of the ravages produced upon the surrounding parts by the incrustation of tartar. It is in fact from this cause that the most healthy people of the poorer and middle classes, even those who enjoy the healthy and salubrious atmosphere of the country not excepted, almost universally lose their teeth at that period of age, when the digestive organs begin to be less regular in their functions."—*Koecker, page* 65.

"Nothing is more destructive to the health of the teeth than tartar. When any considerable quantity of this substance is suffered to collect about the teeth, the gums become inflamed and swollen, often producing absorption of the sockets and the premature loss of the teeth."—*Snell, page* 180.

"Tartar is very injurious and destructive to the teeth; as the accumulation increases, its effects keep pace with it; the gums become exceedingly painful, so as to render the ordinary operation of brushing the teeth almost impracticable, and this inducing a neglect of the common means of preventing its accumulation, it becomes the unavoidable cause of its continued increase. Absorption of the gum and alveolar processes is the next consequence which gradually goes on until the teeth, loosing their support become loose, and at length fall out."—*Thomas Bell, page* 196.

"Next to caries, nothing is more destructive to the health of the mouth than tartar."—*Fitch on the Teeth, page* 377.

er says, that tartar acts chemically on the teeth: in conjunction with other agents, it most certainly does so, as is clearly proved by the facts, that teeth which have been coated with it, for a length of time, are very generally found rough, discolored and decomposing, and that external decay of the *molar* teeth generally commences near the gum, where the enamel is thinest and tartar most apt to collect.

This substance is very productive of scurvy in the gum, by collecting about the necks of the teeth, and by insinuating itself deeply between the gum and sockets, causing inflammation and suppuration which gradually extends to the sockets. Tartar seen about the front teeth is exceeding offensive to a person of nice feelings; it is also one principal cause of a fetid breath, than which nothing is *more disgusting*.

OF THE MEANS TO BE USED TO KEEP THE TEETH FREE OF TARTAR.

It is in the power of almost every person to keep his teeth perfectly free of this substance, and it is to be wholly done by mechanical means, which will be fully treated of under the head of brushing the teeth, tooth powders, &c. Where there is a great disposition to the formation of tartar, some dentists recommend chemical agents for this purpose, as acids or alkalis, but the former are highly improper, as an acid which will act upon the tartar, will also act upon the teeth, for both are principally composed of the same materials, namely, the phosphate of lime: the latter are of little use, as they can only act on the mucus or animal matter, which enters the composition of the tartar. Acids are ruinous to the teeth, not only by dissolving the enamel, but by making the surface of them rough, a state the most favorable possible for the collection and retention of foreign matter, and its action on their substance so as to produce decay.

OF THE OPERATION FOR THE REMOVAL OF TARTAR TERMED SCALING THE TEETH.

When tartar has collected upon the teeth in any quantity, the instruments termed *scaling instruments* are the only proper means for effecting its removal. The operation is to be performed in a very careful manner, and great pains taken to effect the removal of every particle of foreign matter, or it will form a nucleus, about which the tartar will again immediately collect. Where the teeth are covered with large quantities of tartar, many dentists recommend its removal, to be effected at different times: we never saw an instance in which it was not advisable and proper to remove the whole at one sitting. Some dentists are in the habit of using acids, previously to the operation of scaling, in order to soften the tartar. We do not think this practice judicious. There is no difficulty in removing the tartar with proper instruments. Some empirics use acids after the operation of scaling, and term it "whitening the teeth:" this practice makes the teeth beautifully white, therefore, people are pleased, and some think the dentist does not do his duty or serve them as well as another, if he does not "whiten the teeth." This practice cannot be too strongly deprecated, for the acid produces the effect, by decomposing a portion of the enamel, and leaves the teeth very rough, which if left in this state, will soon become more black and filthy than they were before. Some persons are in the habit of having their teeth regularly scaled or cleaned once or twice a year: this practice must prove injurious. It is much better to keep the teeth in such a state, that they will not require scaling at all; for it is in the power of every one, (if we except a few rare cases where the teeth are irregular,) to keep his teeth perfectly clear, if he furnish himself with the proper apparatus.*

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* "In the course of my practice, I have seldom been obliged to repeat an instrumental cleaning of the teeth, after once having restored them to

POLISHING THE TEETH.

The grand secret of preventing external decay, as it so frequently attacks the teeth on their sides near the gums, (not on the contiguous surfaces,) consists in keeping the teeth highly polished. The importance of this fact to the *lovers of sound teeth* is manifested by these circumstances. The teeth never decay on the inside, (we should rather say very seldom, for we have seen a few rare instances,) while they often decay on the out side. Why is this? are the teeth any better protected at this point? is the enamel thicker? No; the reason is that the motion of the tongue keeps the sides of the teeth with which it comes in contact clean, and of their natural high polish; it prevents that stagnation of acid fluids, and collection of putrescent and corrosive matter which act on the teeth on the outside. Again, the teeth of those persons who keep them perfectly clean and highly polished, as rarely decay on the outside as on the inside, while the teeth of those who neglect them are very apt to decay on the out side. Can there be stronger facts to prove the importance of keeping the teeth highly polished?

After the teeth have been scaled, they should always be nicely polished; also when the teeth are at all rough. Few persons, very few indeed, keep their teeth so free of foreign matter, and so highly polished as they ought, if they would prevent decay and consult their welfare, for in proportion to the height of this polish, their aptitude to become rough, dis-

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perfect health, except in some particular cases, or where neglect of the patient to follow my directions, has made it unavoidable. I have always considered it my duty to keep my patients supplied with the necessary means for keeping their teeth clean.

"The practice so frequently adopted in this and other countries, of having the teeth regularly cleaned by a dentist, and irritated by incompetent operations every six or twelve months, although profitable to him is about as ridiculous and mischievous as the exploded one of taking a strong dose of medicine once a month, for the purpose of preserving the digestive organs in a healthy state; a practice so common a long time ago, that its general adoption gave rise to the common salutation, 'Avez vous bien purge."—*Koecker, page* 182.

colored, or covered with tartar is diminished. If the teeth have a perfectly smooth surface, they can easily be kept clean with a brush and water: if they be rough, this can hardly be done with the addition of a tooth powder.

METHOD OF POLISHING.

The teeth can be best and most expeditiously polished, with proper tooth brushes, bits of soft pine wood, pumice stone very finely pulverized, and crocus. The teeth may first be thoroughly but carefully brushed with the pumice stone; then with the bits of wood, they are to be rubbed wherever they are rough, especially near the gums and between the teeth, first with the pumice stone and then with the crocus, which will give them a high and beautiful polish. The front teeth may be polished on their contiguous sides, by running silk thread with pumice stone between them. This last operation is highly useful for the prevention of decay, for whenever a tooth is about to be attacked by external decay, the enamel is always found rough, which favors the lodgement of foreign matter; if it be now polished, this disposition is removed. Hence also, the importance of polishing the sides of teeth after they have been filed. Whenever the front teeth are the least black or discolored, the discoloration should be removed, if possible, by the means just mentioned, and if this cannot be done, no time should be lost in having recourse to the file, for their separation.

There is one state of the teeth, requiring polishing which we wish especially to mention, as it is exceedingly injurious to the teeth, and conducive to their decay.

The teeth of young persons are very often seen covered with a brown or greenish yellow scurf, especially the front teeth; this also occasionally happens to persons more advanced in life. If the teeth of such persons be closely examined, the enamel will be found very rough, and if it could be microscopically examined, ten thousand little holes or rather depressions would be observed in it, in which, the foreign matter or

scurf is contained. This state of the teeth is exceedingly injurious to their health and beauty, and should not be neglected. The foreign matter cannot be brushed away, but instruments will be required for its removal. The teeth should then be polished in the nicest manner.

Many persons believe, or rather are very apprehensive, that scaling the teeth may prove injurious to them, thinking that a portion of the enamel is removed by the operation. Scaling the teeth, when improperly performed, (as when the foreign matter is carelessly or imperfectly removed, or acids used to effect this purpose, or to "whiten the teeth,") is certainly injurious to them; but he who puts himself under the care of a scientific dentist has nothing to fear; he will not remove a particle of the enamel which is not disorganized or destroyed.

"All acids, gritty powders, and injudicious methods of scaling the teeth, are prejudicial: but simply scaling the teeth, that is, cleaning them of stony concretions which frequently collect about their necks, while nothing is scraped off but that adventitious substance, is proper and useful."—*Hunter, page* 192.

"Scaling the teeth is one of the most useful operations in dental surgery."—*Fitch on the Teeth, page* 373.

DEAD TEETH AND ROOTS.

These foreign bodies are extremely productive of the diseases of the teeth, gums, and sockets, by the irritation which they occasion: they are the cause of gum-biles, and are productive of malignant diseases of the jaw-bones: they are also apt to render the breath offensive. Dead teeth and roots exert such a noxious tendency, that we would urge every individual possessing them, who values his remaining teeth, his comfort and health, to have them extracted: they can generally be

easily removed; much more so, than living teeth or fangs, for the connexion existing between them and the periosteum is destroyed, so that they are only held in their sockets mechanically, and nature often has thrown them out so much, that they merely adhere to the gum.

"Dead teeth and stumps, by the constant irritation and morbid action which they occasion, may be considered as the principal cause of many nervous and rheumatic affections of an alarming nature, accompanied with much pain; namely, disorders of the organs of sense, as of the eyes and ears; diseases of the brain, face and more distant parts, under the forms of *tic douloureux*, convulsions, epilepsy, hysteric hypochondriasis, dyspepsia, &c."—*Koecker*, *page* 258.

"Dead teeth and roots are generally the cause of alveolar abcesses or gum-biles. They should always be extracted."—*Thomas Bell*, *page* 216.

GUM-BILES.

Gum-biles are the result of inflammation in the sockets of the teeth, or rather of the periosteum or membrane which lines the sockets, and surrounds the fangs, terminating in suppuration; and this inflammation is caused by the irritation of dead teeth and fangs, which have become foreign and extraneous bodies, by a total destruction of the vascular and vital connexion existing between them and the periosteum.

Nature, ever watchful to guard herself against disease, endeavors to rid herself of these noxious bodies, and she slowly performs this process, by causing an absorption of the sockets,

and deposition of bony matter at the bottom of them, which gradually protrudes the cause of irritation. During this effort, there is always a chronic inflammation in the parts, which, by cold and other causes, often becomes lighted up into active inflammation, which terminates in suppuration, and gum-biles are the consequence.

Inflammation never attacks the socket of a healthy fang, so as to produce gum-biles, unless caused by some mechanical violence. The irritation of the file, in preparing stumps for the substitution of artificial teeth, sometimes occasion gum-biles, especially if the stumps are bad, or the patient careless, and expose himself to cold and wet. We have occasionally seen them result from the irritation of a plug upon the naked nerve of a tooth, causing inflammation, which, if the plug be not removed, extends to the socket.

Gum-biles are of frequent occurrence, and when neglected, often very serious in their consequences, either bursting externally, so as to produce an ugly ulcer, which, in healing, leaves an unseemly cicatrix behind, that disfigures the individual for life, or, causing the death of a greater or less portion of the jaw-bone, which exfoliates and produces much mischief.

Gum-biles generally burst in the gum, nearly opposite to the point where the dead fang is situated, which has caused the malady, and sometimes after the matter has been evacuated, the opening contracts, but it is seldom that the gum-bile disappears, and a small fistulous opening remains, at which matter continues to be discharged; every time the individual takes cold, a recurrence of the inflammation, and a re-accumulation of matter are sure to follow: hence, the only effectual cure of them, is the removal of the cause, or the extraction of the dead teeth or fangs, as soon as the inflammation shall subside, so as to render the operation advisable: often, when the dead teeth are loose, it is better to remove them at once; at all events, as soon as the soft feeling of the swollen parts, and the sensation of throbbing pain indicate the formation of mat-

ter, a puncture should be made with a lancet, so as to suffer it to escape and prevent a more extensive effusion.*

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* "When the inflammation caused by a dead tooth is very great, we should be particularly careful to guard against its effects. The formation of matter is often so considerable, as to produce an abcess of no small extent. In some cases, the matter is contained within a cavity, extending through the length of one side of the jaw. Those which produce the most distressing symptoms are the wisdom teeth of the lower jaw; when inflammation extends from either of these teeth to the contiguous parts, the swelling is speedily diffused over the whole cheek, so as to close the eye, and cause a considerable hardness of the upper part of the neck near the angle of the jaw. The muscles of the jaw are also affected by adhesive inflammation, and they become so rigid, that it is with great difficulty the mouth can be opened.

"These cases require the utmost attention, for a large abcess is usually formed, which, if left to itself bursts externally; the ulceration extending through the substance of the cheek, there producing a most troublesome sore, which when healed, leaves a deforming scar. To prevent these sad consequences, when the matter is formed, a free opening should be made on the inner side of the cheek, into the softest part of the tumor." —*Fox's Natural History of the Teeth, part II, page* 70.

When gum-biles burst externally, they generally make their appearance in the middle of the cheek, if the abcess be situated in the upper jaw, but if in the lower, the opening is generally seen a little below the jaw or at its angle. These abcesses are rarely healed till the cause is removed: we have know dressings to be applied to them for months without any benefit whatever: we have even known them to be treated as scrofulous. Mr. Fox mentions a case, wherein lotions and dressings were employed for two years without advantage; therefore, it is folly to attempt a cure, without first removing the cause of the mischief.

Whenever a person has a swelled face from a gum-bile, great care should be taken that the abcess does not burst externally; if there be any danger of this, it should be early opened on the inside of the mouth.

When gum-biles are neglected, they sometimes produce the death and exfoliation of a greater or less portion of the jaw bones, which occasions much mischief. Mr. Fox mentions three such cases. Mr. Koecker and Mr. Bell, state that they have seen many cases of exfoliation of portions of the jaw bones, caused by neglected gum-biles. Other authors make similar statements. Like cases have fallen under our own observation, in one of which, four sound teeth were lost, and in another, two. Hence, gum-biles should never be neglected, for fear of the consequences which often result from them.

OF A FETID BREATH.

In healthy persons, a fetid breath, (with which we so often meet, and which is so offensive to the person of nice feelings,) is generally caused by the state of the mouth, as tartar and other foreign matter, diseased teeth, gums and sockets, and the decomposition of food lodged in the interstices of the teeth. Decomposing artificial teeth render the breath exeeedingly offensive.*

That the above observations are correct, and that an offensive breath does not depend on the lungs or stomach, as is too often supposed, is proved by the following circumstances.

Healthy infants have a sweet breath, and so do old persons who have lost all their teeth. The breath of persons who have sound teeth and keep them clean is seldom offensive; on the contrary, the breath of those, whose teeth and mouth are diseased, or who neglect them, is generally more or less fetid. Let a person who has a fetid breath, cleanse his mouth with a detergent wash, or breathe through his nose, and it is no longer offensive.

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* "Fetid breath is entirely occasioned by the state of the mouth."—*S. S. Parmly's lectures, page* 24.

"When the disgusting effects of a foul mouth are considered, it would appear impossible, that any persuasion could be necessary, to induce persons to obviate so great a nuisance, even on their own account; or, if they are too debased to procure their own comfort and cleanliness, at the expense of a very little care and trouble, they surely have no right to shock the senses of others, who possess more propriety and delicacy of feelings than themselves. Yet so it is, and the sight and the smell are alike constantly outraged by the filthiness of people, who seem to obtrude their faces the closer in proportion to the disgust which they occasion."—*Thomas Bell, page* 192.

Bruscrade once said of a young lady whom he heard sing, and who had a strong breath, "that is a charming voice; the words are very fine, but the *air* is not agreeable."—*Gerbeaux, page* 33.

"A foul mouth, according to the testimony of Leuwenhoeck, is the habitation of numerous animalculæ; his communications on this subject are very curious, and are published in the philosophical transactions; Vol. 16, No. 159, page 568, and Vol. 17, No. 197, page 646."—*Murphy, page* 69.

Consumptive persons, those having a febrile state of the system, and those whose digestive functions are deranged, or whose bowels are habitually constipated, will often have an offensive breath which does not depend upon the state of the mouth.

Remedies.—The only effectual remedy for this state of the breath, is the complete removal of its causes; if this can not be done, it may be disguised by the frequent use of almost any aromatic, or aromatic tinctures or washes: of these last, the tincture of myrrh, largely diluted with water, can be used with the greatest advantage. The proper manner of using the myrrh is to take a sufficient quantity of cold water in a tumbler, then add enough of the tincture to cloud it, or to make it agreeably strong. Chlorine, from its well known property of destroying animal or vegetable effluvia, has been strongly recommended. "The chlorine tooth wash," has been a fashionable remedy. We would advise those who are disposed to use tooth washes of any kind, to try their effect on the tooth of any animal, by immersing it in the fluid, for these washes are apt to contain acids, put into them for the purpose of "whitening the teeth." A chlorine tooth wash might be made, that would be innoxious and useful: solutions of the chlorides of potash, soda, or lime, rendered pleasant by some of the aromatics, may be used with advantage.

CLEANLINESS OF THE MOUTH.

The East Indians, though looked upon by civilized nations as barbarians, are, nevertheless, worthy of imitation by them, in one particular at least, and this is the attention to cleanliness of the mouth. We have had frequent opportunities of conversing on this subject, with persons who have resided in India, and they agree in affirming, that the natives in

every part of the East Indies, pay great attention to their teeth. They are said to have better teeth than the inhabitants of any other part of the world, which we may fairly attribute to their habit of keeping the teeth and mouth free of foreign matter.*

IMPORTANCE OF CLEANLINESS OF THE MOUTH.

The importance of keeping the teeth perfectly free of foreign matter, has been illustrated in the consideration of "caries of

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* "The natives of India, says Dr. Lind, (who was in the service of the East India Company during twenty-five years, and travelled over every part of India,) rub their teeth with fibrous wood, draggon's blood, canes, and mallow roots, which cleans the interstices of the teeth."

"The natives of Hindostan, the Bramins in particular, are extremely delicate in every point relating to the teeth; every morning when they rise, they rub them for upwards of an hour together with a twig of the raccmiferous fig-tree, at the same time addressing their prayers to the sun, and calling down the blessing of heaven on themselves and their families. As this practice is prescribed in the most ancient books of law and divinity, we may imagine it coeval with the date of their religion and government. It exhibits a curious proof of the regard which this polished and scientific people had for the purity and beauty of the mouth, when so simple a practice is inculcated as a law, and rendered indispensible as a religious duty."—*Murphy, page* 151.

The natives throughout India, use a tooth powder, which they call *mungun*, prepared from the betel or areca nut; its constant use gives to the teeth a reddish cast, which they consider as an acquisition to the beauty of them.

"We respire, about twenty thousand times in twenty-four hours, and yet, for months and years, this vast quantity of air is rendered poisonous by one or more diseased teeth. How little does it avail an individual, if by every possible means the purity of the air is preserved; if no impurities are suffered to remain in the streets; if his tenements are kept clean, his apartments ventilated; if he makes distant journeys at a great expense of time and money, for the benefit of pure air, and at the same time, carry the *cloaca* of filth in his own mouth? If the state of the breath, caused by bad teeth, so affects the olfactory nerves of a person near an individual having bad teeth, what must be its effect upon the delicate and sensible tissues of the lungs of the person himself? Nature has formed the lungs most delicate and sensible, and susceptible to the slightest injurious impressions:—She has also finely tempered the atmosphere for its safe and healthy reception in these delicate organs; but an accident, or a disease, may render it impure, unfit for respiration, and cause it, instead of harmonizing with the lungs in the most perfect manner, to exercise a baneful influence, armed with pestilence, and scattering the seeds of disease over the lungs, thus pouring the streams of deadly poison through every vein of the system."—*Fitch on the Teeth, pages* 300, 301.

the teeth, "scurvy in the gums," and "tartar of the teeth," to which the reader is referred.

When we consider that foreign matter is, directly, the grand cause of external caries, scurvy in the gums, and of an offensive breath; and indirectly the cause of some serious local disease of the mouth and jaws, of derangement of the general system, and of much pain and suffering, it seems surprising that any person can be so unmindful of his interest and welfare, as to neglect to keep his mouth clean; besides, one would suppose, that the luxury of a clean and wholesome mouth, would be a sufficient inducement for procuring it, and amply repay the little time it costs. Notwithstanding, there are thousands who wholly neglect the teeth. Indeed, there are few comparatively, who keep their teeth perfectly free from foreign matter: though they may use tooth brushes, tooth powders, &c. yet they do not procure proper ones, or use them properly. We shall now use our best endeavors to point out the means, by which every person who has a healthy mouth, may keep his teeth perfectly clean.

OF THE MEANS TO BE USED IN ORDER TO KEEP THE MOUTH CLEAN.

The means to be used for the above purpose are tooth brushes, tooth picks, tooth powders, and on some occasions astringent and detergent washes.

TOOTH BRUSHES.

Tooth brushes of various kinds and shapes have been contrived and are kept in the shops. There is much diversity of opinion among dentists as well as others, as to the kinds of tooth brushes best adapted for the purpose of keeping the teeth clean; some recommending either hard or soft brushes, and others a medium. In this dilemma, it is difficult to give directions that shall prove satisfactory to all. People must (for they will) be governed in a great measure by their

own fancy; still, we shall offer our candid opinions on this subject. And first, we do not approve of the use of a hard brush for these reasons. In brushing the teeth, a hard brush slips over them without entering their interstices, for its stiffness prevents this: hence those parts of the teeth most essential to be kept clean, because they are the most liable to decay there, from the action of foreign matter, are not brushed at all. A hard brush is apt to tear and fret the gums, and has a tendency to occasion a recession or absorption of them from about the necks of the teeth, so that they appear somewhat longer than natural: we have often seen this effect produced by the constant use of a hard brush. On the contrary, we do not think that a very soft brush can be used with the greatest advantage.

In the choice of tooth brushes, we generally recommend our patients, (or furnish them with such,) to get brushes of a middling size, the bristles being well arranged, straight, and of considerable firmness, though not stiff, or too unyielding. These brushes we recommend to be rubbed with water on a sand brick, till the bristles are soft enough to enter the interstices of the teeth, and not chafe or fret the gums when the brush is freely used; and these to be kept moist, or in a tumbler of water, for use, as occasion may require. Any brush should be kept moist or it becomes stiff. Such a brush as the above, we always use in preference to any others which we have used experimentally. We depend more upon our tooth powder than our brushes, in keeping our teeth clean. We conceive that tooth brushes are generally thrown away, when they are worn enough to render them most useful.

MANNER OF USING THE BRUSH.

No definite directions can or need be given for this purpose The person who accustoms himself to the use of a tooth brush, always contrives to use it to suit himself. The brush should be carried longitudinally backwards and forwards across the teeth; also moved freely up and down, that the bristles may

enter and clean the interstices of them. Here again is the advantage of using such a brush as we recommend; for a hard brush cannot be thus used with advantage. The teeth should never be brushed furiously so as to fret the gums, but deliberately. The advantage of carrying the brush up and down is very great, and is absolutely necessary in order to keep the teeth clean. In cleaning the interstices of the teeth, a hint may be taken from the habits of the natives of India: they rub the teeth up and down with the bruised ends of soft wood, canes, rattan, &c. with the mungun or betel nut tooth powder.

Many persons do not brush the back teeth at all, and never the inside of them; but merely brush the front teeth externally. Most persons do not brush the back teeth sufficiently. The brush should be so managed, that it shall clean every part of the teeth, between them, and on the inner side, as well as the outside of them; and with a little care this object can easily be effected. The front teeth of the lower jaw especially, should be freely brushed on their inner side, for these teeth are more frequently encrusted with tartar than any others in the mouth, on account of their proximity to the sublingual ducts, and from the circumstance of being more seldom brushed than the other teeth. These teeth are seldom lost by decay, but thousands of them are daily dropping out perfectly sound, encrusted with tartar, which has produced disease in the gums and sockets, their ruin being wholly the effect of neglect; for these teeth would never be lost after this manner, if they were kept free of tartar.

Brushes of a peculiar shape are kept at the shops for the purpose of brushing the *incisores* of the lower jaw, on the inner side. They may be used, but we think a common brush of considerable stiffness to be preferable, and is to be used by drawing it frequently out of the mouth, over these teeth, so as to enter between them. A napkin or handkerchief on the finger, may also be used with advantage.

From what has been said in previous chapters, it is evident

that cleanliness of the teeth is of great importance in the preservation of them. Few persons will be able to keep their teeth so free of foreign matter as could be desired, by means of the simple brush and water, though there is a very great difference in this respect, the tartar accumulating much more rapidly about the teeth of some individuals than others. It is generally necessary to have recourse to some kind of tooth powder in civilized life in order to effect this object.

There is a great variety of opinions among people, as to the advantage of tooth powders: some use them once in two or three days, or a week: they are apprehensive that they may wear away the enamel so as to expose the teeth to decay. If it be necessary to use a tooth powder at all, it should be used every morning, at the time of rising, for these reasons. The tartar is constantly being deposited about the teeth from the saliva. If a person will observe his teeth in the morning, when he rises, he will perceive them to be coated with a yellowish slimy substance, which is the tartar that has been deposited upon the teeth during sleep. When tartar is first secreted it is quite soft and can easily be removed with a tooth brush, but if it be neglected, it soon becomes concrete and hard, and cannot be removed without the aid of instruments: hence it should be daily removed. As a general rule, people do not use the tooth brush and powders, so freely as would be for their advantage. The prevalent opinion that the enamel may be easily worn off—that there is danger of doing this, by the daily use of a tooth powder, is founded in error—is a misconception. The enamel is a very hard and dense substance, so much so, that sparks may be elicited from it with a bit of steel. Besides, if the teeth be not kept free of foreign matter, how can the enamel be worn away? We never yet saw a set of teeth, worn out or injured by the daily use of a proper tooth powder; nor have we been able by inquiry, to find the person who has seen this much feared result. We do not wish, by any means, to inculcate such a principle as this, that there is no danger to be apprehended of wearing off the enamel, by the use of

improper dentifrices; or even that this substance cannot be worn off the teeth by the injudicious use of good tooth powders; but we do contend, that there is no danger to be apprehended from the daily use of suitable tooth powder, so as to keep the teeth perfectly clean and free of foreign matter, and of their natural polish. We have been in the habit of using a tooth powder daily, as regular as the rising sun, for a great number of years, yet, we cannot perceive that our teeth are thereby worn away in the least.

A great deal of mischief will be prevented by this procedure, for one grand secret in the preservation of the teeth consists in keeping them perfectly clean and highly polished. Teeth, having their natural polish are easily kept clean, for foreign matter does not readily adhere to a polished surface, which is not the case with a rough one. Few persons, very few indeed, keep their teeth perfectly free of tartar! The enamel is destroyed ten times more rapidly by the chemical action of foreign matter, than it can be by the use of any rational tooth powder.

Finally, in the use of tooth brushes and dentifrices, we would recommend strict adherence to the following maxim.

Keep the teeth perfectly free of all foreign matter and preserve their natural polish. If this object can be effected by the daily use of a brush and cold water, (which is seldom the case,) they are all that are required or proper ; but if not, a proper tooth powder should be used daily in addition, just freely enough to accomplish this purpose.

It is an excellent plan to brush the teeth in the evening before retiring, to remove any particles of food that may adhere to them. This habit renders the mouth delightfully sweet, and is very grateful to those accustomed to it, and thus amply repays them for their trouble, and must prove of advantage in the preservation of the teeth.

In brushing the teeth, water should be used of that temprature, most agreeable, and not cold enough to produce painful sensations in them.

TOOTH PICKS.

Tooth picks, though so trifling, we conceive to be dental implements of great utility: they should be in the pocket of every gentleman and used after every meal, to remove the particles of food lodged between the teeth, in order to prevent its decomposition and consequent effects. If tooth picks are of so much service to gentleman, why may not their use prove of advantage to ladies also? We would strongly recommend them to give it a place in their *boudoir.*

Tooth picks are made of gold, silver, steel, ivory, tortoise shell, and of goose quils. The best dentists of the age do not approve of the use of metalic tooth picks, thinking them to be injurious, or not so useful as other kinds, those made of tortoise shell answer a better purpose; but one made of a common goose quill is to be prefered to all others: it becomes quite soft and yielding in the mouth and may be used with impunity.

TOOTH POWDERS.

In no part of the dental profession has more whim, fancy, ignorance and empiricism prevailed, than in the inventions of tooth powders: some have exerted their wits to find out a dentifrice that should in itself prove a penacea for the teeth; others for lucre's sake, to compound one that should please the people by making the teeth beautifully white.

From the earliest era of medical science, in all countries, a great variety of recipes for tooth powders have been handed down to us, some the most singular and absurd in their composition. One would suppose, in looking at the formulæ for dentifrices given by the ancients, that they vied with each other in the greatest number of articles, some of them the

most absurd and ridiculous, and too indelicate to be repeated. Even some of the materials used in modern times are equally absurd; such as calcined bones, egg shells, crab's claws and eyes, fish bones, mother of pearl, to which may be added soot, scotch snuff, ashes of the cigar or of tobacco, &c. in common use: these however possess the virtue of being harmless.

A great deal of mystery has ever hung over the composition of tooth powders: it is essential to the sale of them, as it gives full scope for puffing off their virtues and imposing on the credulous man; for deprive any remedial agent of the charm of mysterious composition, and he will not look at it.

In composing tooth powders, we should refer to the object of them, which is to keep the teeth free of foreign matter, and sometimes, to possess an astringent property. To effect this object, all acid substances are highly improper; therefore, we are to choose mechanical agents: it matters not much, as to utility, what kind of mechanical subtances we employ, provided they be properly prepared, and innoxious, but we should prefer those most pleasant,*

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* "All the argillaceous earths form good tooth powders when mixed with some aromatic."—*Dr. Hooper.*

"A tooth powder is rarely of little use except as a mechanical aid to the brush. The aromatics which enter into these compositions are of no use to the teeth, though they may certainly be more or less useful to the gums; myrrh, bark, and other drugs can neither whiten the teeth nor preserve them. Bearing in mind, that the use of a tooth powder is to assist the action of the brush, those substances should be chosen which can be finely levigated, and which have no tendency to wear away the enamel. The testaceous powders, therefore, in combination with some alkaline should be preferred. The best tooth powders in my opinion are composed of such ingredients as the following,

Take of	Prepared chalk, - - - -	3	drachms.
"	Castile soap, - - - - -	1	"
"	Orris root, - - - - - -	2	"
"	Carbonate of soda, - - -	1	"

"I have generally found that after the teeth have been perfectly cleaned with instruments, they are kept free from tartar, by brushing them once or twice a day with this powder."—*Snell, page* 199.

"In those constitutions in which there is a peculiar tendency to the formation of tartar, it will be necessary to have recourse to the daily use of some simple tooth powder, such as prepared chalk, or any other sub-

The very best tooth powders may be prepared from some of the following substances, and can be obtained in any quantity of the druggist.

Substances that act mechanically.—Prepared chalk, pumice stone very finely pulverized, Armenian bole, and charcoal.

Astringent substances.—Peruvian bark, orris root, gall-nuts, and myrrh.

Aromatic substances.—Cinnamon, cloves, and the essential oils.

Chemical substances.—Carbonate of soda, and soaps.

Many others might be added to the above, but they are enough and are to be preferred.

In compounding a tooth powder, the base or mechanical agents are first to be chosen, and then the other substances are to be added according to the purpose for which they are intended. Tooth powders possessing different mechanical and medicinal properties are required for different individuals. We will give a few formula as examples: the following is

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stance equally soft and simple. If the gums are spongy and lax, powdered myrrh or bark, may be added with advantage."—*Thomas Bell, page* 200.

"The best method to effect this, (to keep teeth clean,) is with a brush and water; should this prove insufficient, powders composed of Armenian bole, prepared chalk, peruvian bark, or charcoal, may be used with great advantage. The interstices of the teeth may be cleaned by passing between them a thread of waxed silk, thereby to dislodge whatever may have collected on their sides."—*Parmly's Notes to Brown's Dentologia, page* 174.

"*Qualities of Tooth Powders.*—Soot acts by mechanical friction, but not superior to any bitter powder, as bark, &c.—charcoal acts mechanically by its friction: burned bread the same. Gun powder produces no effect but through the charcoal and nitrue it contains. Alum is a most mischievous application to the teeth, being the produce of oil of vitriol and clay. It is a very strong styptic; but on coming in contact with the teeth, it is immediately decomposed, the acid uniting with the teeth. Salt, perfectly innocent, although not serviceable. Nitre, or *salt-petre*, a valuable application to inflamed gums, removing the rough viscid slime, which, in some, collects over the teeth and mouth; it is a useful gargle and does not act on the teeth. Cream of tartar, improper; acts on the enamel. Mixtures of soot, salt, soap, &c. &c. remarkable only for their nauseous qualities."—*J. Fuller, page* 65.

an excellent one for common use.

Take of	Pumice stone, - - - -	1	part
"	Prepared chalk, - - -	4	"
"	Orris root, - - - - -	1½	"
"	Carbonate of soda, - -	1	"
"	Cinnamon, - - - -	½	"

The ingredients should be finely pulverized. The pumice stone and chalk act mechanically; the orris root is a mild and delightful astringent; the carbonate of soda acts on the same principle as soap, and the cinnamon makes it more pleasant. Any of the essential oils may be used for the last purpose as in the following fomula.

Take of	Pumice stone, - - - -	2	ozs.
"	Prepared chalk, - - -	8	"
"	Orris root, - - - - -	3	"
"	Carbonate of soda, - -	2	"

" Oil of Cinnamon from 20 to 40 drops, more or less according to fancy. The oil of cloves, anise, roses, bergamotte, thyme, rosemary, lavender, lemon, &c. &c. may be substituted, or used in combination. Myrrh, camphor, myrtle, amber, musk, &c. may also be added. By the combination of these materials, tooth powders may be composed possessing " all the delightful fragrance of Oriental perfume." Any person may use tooth powders composed as above with impunity.

When there is a great constitutional disposition to the formation of tartar, a tooth powder possessing greater mechanical action must be used in order to keep the teeth free of that substance, as in the following fomula.

Take of	Pumice stone, - - - -	1	part
"	Armenian bole, - - -	1	"
"	Prepared chalk, - - -	2	"
"	Orris root, - - - - -	½	"

"	Carbonate of soda, - -	1	"
"	Cinnamon, - - - - - -	½	"

Tooth powders may be colored with a little crocus, red-earth, Armenian bole, draggon's blood, carmine, redlake, &c.: crocus gives to a tooth powder, a pretty color.

Astringent tooth powders.—These powders may be composed by adding gall-nuts, oak bark, or peruvian bark to one of the fomula just given, or thus:

Take of	Pumice stone, - - - -	1	part
"	Prepared chalk, - - -	2	"
"	Orris root, - - - - -	1	"
"	Gall-nut, - - - - -	½	"
"	Carbonate of soda, - -	1	"
"	Cinnamon, - - - - -	½	"
Or, take of	Prepared chalk, - - -	4	ozs.
"	Peruvian bark, - - -	1	"
"	Orris root, - - - - -	1	"
"	Myrrh and camphor, of each	1	drachm.
"	Nitre, - - - - - - -	1	"
"	Cinnamon, - - - - -	4	"

Either of the above forms may be used with advantage, when the gums are diseased: directions for the use of astringents have been given under the subject of scurvy in the gums. (See page 143.) Tooth powders or washes cannot be of much service in the cure of diseased gums, unless the causes of the disease be previously removed.

In conclusion of this subject, we make the following extract from Mr. Snell's work on the teeth, page 199.

"Almost all the tooth powders prepared for the shops are injurious, and deserve public censure in a similar manner to what took place in Paris, in 1793. A tooth powder to be popular, must make the teeth white: this is usually accomplished by the use of acids. Many dentists make a great secret of their compositions. No man of science can be deceived by such *charlatanism*.

"Charcoal is highly spoken of. There are however, two strong objections to it: first, it cuts through hard substances rapidly, and its improper use may destroy the enamel; and secondly, it is a very dirty application to the mouth. When it is used, that which is made from the areca nut, or from the vine shrub is to be preferred."

Charcoal, when used as a tooth powder should be very finely pulverized, and made from soft, rather than hard wood: we think that there are many other substances to be preferred. Charcoal has been strongly recommended as a dentifrice, for its antiseptic property: as applied to the teeth, this does not amount to much. Dr. Torey recommends animal charcoal, or ivory black, for a tooth powder.

TOOTH ACHE.

Tooth ache is caused by two diseases, which are denominated odontitis and periostitis. The former is an inflammation of the internal membrane or nerve of the teeth, and the latter is an inflammation of the periosteum or membrane which lines the sockets of the teeth and holds them in the jaws.

Perhaps there is no pain more acute than that sometimes experienced from tooth ache, and therefore none more to be dreaded, as most or many persons can bear witness. The throbbing acuteness of the pain of odontitis, arises from the confined situation of the internal membrane; the cavity of the teeth not permitting that distention or swelling which accompanies inflammation; hence, the pressure upon the nerve causes the most acute pain.*

* The following characteristic lines are from the 'Address to the Tooth ache,' by Robert Burns:—

"My curse upon your venomed stang,
That shoots my tortured gums alang,

There are a thousand remedies for the tooth ache; the shops are full of nostrums: tincture of opium, ether, camphorated spirits, the essential oils, as oil of cloves, are as good as any of them. Caustics have been much used, (and these form the base of all quack remedies,) for the purpose of destroying the nerve, as the nitric, muriatic or sulphuric acids; of these, the nitric is the best, as it has a powerful affinity for animal matter, and destroys it without much pain. The nitrate of silver, (lunar caustic) was a favorite tooth ache remedy with the great surgeons Hunter and Abernethy, a bit being introduced into the painful tooth. Other caustics have been used. One great objection to these substances is, that they destroy or injure the teeth. The most effectual and least painful means of destroying the nerves of the teeth is *arsenic*, and we most strenuously recommend its use for this purpose. Thousands of teeth are daily being extracted that may easily be preserved, often for a great number of years, by the application of this remedy and plugging the teeth afterwards. (See method of using the arsenic, page 115.)

Kreosote has lately been used as a powerful remedy for the tooth ache: it frequently acts like a charm. But the most powerful of all temporary remedies, that we have ever used,

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And through my lugs gi'es mony a twang,
Wi' gnawing vengeance!
Tearing my nerves wi' bitter pang,
Like racking engines!

"When fevers burn, or ague freezes,
Rheumatics gnaw, or cholic squeezes,
Our neighbor's sympathy may ease us
Wi' pitying moan!
But thou—the hell o' a' diseases,
Ay mocks our groan!

"Where'er the place be priests ca' hell,
Whence a' the tones o' misery yell,
And ranked plagues their numbers tell,
In dreadfu' raw;
Thou—tooth ache, surely bear'st the hell,
Amangst them a.'"

is either the acetate or sulphate of morphia, (morphine:) the powder is introduced into the painful tooth on a little cotton twirled round the end of a probe. The acetate of morphine is said to be the active agent in Clark's celebrated Anodyne Tooth Cement, for curing aching teeth; by which the inventor is said to have made a fortune. Morphine is a most powerful medicine, and therefore should be used with great caution.

As it is evident that all temporary means for relieving tooth ache are of no permanent advantage, and that, the pain will in all probability continue until the nerve has perished, it is best to take measures at once, to effect a permanent cure; therefore a dentist should be consulted, who will either reduce the inflammation of the nerve and plug the tooth, or, if this cannot be done on account of the nerve being too much exposed, he will destroy it, or advise extraction. If the tooth be too much decayed to admit of preservation, it should be extracted at once, as this must be the ultimatum.

By this means, a great deal of suffering will be prevented, and the patient rid of a troublesome, offensive and injurious body. A tooth that is not of service, should never be permitted to remain in the mouth, on account of the pain and irritation which it occasions, and the injurious effect it has, in inducing decay in the *other teeth*.

It is astonishing how much pain many persons, of a timid disposition, will suffer before they can be prevailed upon, under any circumstances, to consult a dentist.

The truth is, that the pain of all dental operations is terribly exaggerated. Most persons who have not had experience, dread any operation on the teeth, as though it were an operation of the first magnitude, that is, an operation in which life or death will be the result. Dental operations as a general *rule*, if early performed, are not *very painful*. Every person can bear them, and laugh while they are being performed. The extraction of the teeth is painful, but not so much so as is generally imagined.

When the pain arises from inflammation in the socket, the

tooth has become a foreign and extraneous body, its nerve having perished; therefore, it is best to remove such teeth as a general rule, for though the inflammation will subside, and resolution take place, yet they will be subject to like attacks, every time the patient takes the least cold, till they are removed. The periosteum has become disorganized, and all vascular and vital connexion existing between it and the fangs destroyed.

Periostitis frequently terminates in gum-biles, which are very troublesome and painful. Sometimes the inflammation spreads to the contiguous parts, and a swelled face is the consequence. In such cases it is advisable to foment* the face, and open the abscess as soon as it comes to a head, and when the swelling has subsided, to extract the cause of the mischief.

Whenever a tooth becomes dead, nature, ever watchful of her charge, endeavor to remove it, and she effects this process, by causing an absorption of the periosteum and sockets, and a deposition of ossific matter at the bottom of the sockets, which gradually protrudes the teeth.

The fangs of teeth, the crowns of which have decayed away, are always removed by this process, if left to nature; very often the dead fangs are completely thrown out of their sockets, and lie flat on the gums to which they adhere.

When there are many carious and painful teeth and stumps, in the mouth, the health is often injured, from the constant and continued pain and irritation, which perfectly unfits the patient for exercise, of either body or mind, and frequently he is driven almost "mad with the tooth ache," and sleepless

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* The best fomentation for a swelled face, in our opinion, is the following:

Take a handful of camomile flowers and one large popy head, and pour on them, a quart of boiling water: flannels folded several times, are to be wrung out of the infusion and constantly applied to the face till the pain abates. The infusion may also be held in the mouth.

An infusion of the hop, also makes an excellent fomentation for the above purpose. A popy head or a few drops of laudanum may be added with advantage.

nights are far from mitigating that febrile state of the system, always the concomitant of irritation.

Frequently, sympathetic pain is felt in the face, temples, eyes, and in the ears; a reference to the nerves of the face will explain the cause. (See page 171.)

When the wisdom tooth is affected, ear ache is a common consequence, and the reflected branch, called the chorda tympani, which joins the seventh pair or auditory nerve explains this fact.

Sympathetic head ache is also an occasional consequence of bad teeth. All these facts are explained by the intimate connexion, that subsists between the nerves distributed to these parts.

It often happens that a patient cannot tell which tooth is painful, and points out a tooth in the upper jaw as the one he thinks diseased, while the real cause of the pain is situated in the lower jaw, and vice versa. The removal of the affected tooth gives relief. Not unfrequently, a patient will point out a sound tooth as the one painful, and it may be hard to convince him of his error. We have known sound teeth to be extracted to gratify the whims of patients, or for the benefit of the operator's purse. A person who has the hardihood to extract a sound tooth under such circumstances, ought to be hanged.

It is very extraordinary that the pain of tooth ache should be so much under the influence of the passions of hope and fear: an individual about to have a tooth extracted very often declares that the pain has left him, though it was before jumping. Empirics have taken advantage of this circumstance, and pretended to cure tooth ache with charms and various nostrums, and succeed at the time, but the patient is no sooner out of the influence of the secret agent, imagination, than he suffers penance for his credulity. The burning of the *antihelix* of the ear, for the cure of tooth ache owed its popularity to the effect of the passions.

This notion were not worthy of notice, but for amusement, as any one will perceive that a division of any part of the ear cannot effect the nerves of the teeth, as they are derived from a different source.

IMPORTANCE OF THE TEETH TO THE ANIMAL ECONOMY.

The human system may be compared to a very complicated but perfect machine, all of whose parts are essential to its perfect operation.

When the physiologist first contemplates the structure of the human body, he is struck with its apparently complicated nature; but as he examins it, he perceives the beautiful simplicity by which the different organs and parts constituting a perfect whole, all of which are essential to its perfection. To each organ is assigned a particular and important function, and in health, all the organs act in unison and thus promote each others action; but when one organ becomes disordered, it is a law of nature that the whole must suffer more or less in proportion to the injury: hence, there is no part of the animal system but that is essential to its welfare. The importance of the teeth may be illustrated on this principle. The performance of the functions of the teeth is essential to the welfare of the animal economy; and hence most animals are furnished with a masticatory apparatus, and the loss or destruction of this apparatus is attended with serious consequences, as is seen with some domestic animals, which, under such circumstances, dwindle away and die. The loss of the teeth does not prove so serious to man, as he can contrive means for preparing his food for digestion; yet even to him, the mastication of the food, and its commixture with the saliva is essential to digestion, By making the stomach perform the

functions of the teeth, it becomes deranged and a trian of evil consequences follow.

"The importance of the teeth is such, that they deserve our utmost attention, as well with respect to the preservation of them when in their healthy state, as to the methods of curing them when diseased. They require this attention, not only for the preservation of them, as organs useful to the body, but also on account of the other parts with which they are connected; for diseases of the teeth are apt to produce diseases in the neighboring parts, frequently of very serious consequences."—*Hunter, page* 131.

The teeth are essential to articulation.

"If the great distinctive attribute of man be the faculty of speech, that speech can never be complete or perfect, without two arches of teeth to modulate the sound and give proper utterance to the words. Indeed, it is obvious to every one, that when the teeth are lost, the speech becomes imperfect, and often scarcely intelligible.

"This circumstance makes them valuable beyond measure to a public speaker, and their preservation ought to meet due attention from those who wish to shine, either in the senate, at the bar, or in the pulpit.

"Without these instruments of utterance, the graces of eloquence are lost, and the power of impressing the mind or convincing the understanding, if not destroyed, is considerably diminished."—*L. S. Parmly's Lectures, page* 42.

A loss of the teeth is not only injurious to the general system, but it produces sad deformity.

"In consequence of the complete, or even partial ruin of the teeth, the face shrinks, the voice looses its harmony, and the pronunciation is very imperfect. The countenance assumes a different expression, is hard or morose; the flesh of the cheeks flag and hang down, and wrinkles prematurely furrow the face. The mouth and nose also change; the chin seems to be longer and approaches much nearer the latter

organ, ('a pair of patent nut crackers:') in short, every part of the face is deformed, and presents the anticipated sight of painful destruction."—*Gerbeaux, page* 31.

The teeth are essential to personal appearance or beauty.*

> "Without its aid how hard were woman's lot,
> To die neglected, and to sigh forgot."

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* "The teeth are the greatest ornament of the human countenance; their regularity, their whiteness constitute their beauty: these qualities please the sight, and add new attractions to the face. Should the mouth exceed in magnitude its common size, a fine set of teeth will disguise the defective conformation, and frequently such is the prepossession which results from a fine set of teeth, that the same mouth would appear defective if it were smaller. Were you to see a woman laugh, whose wide mouth discovers thirty-two dazzling pearls, you would feel no temptation to scrutinize the extent of the diameter of her mouth; your whole attention will be directed towards the beauty of her teeth, and the graceful smile that exhibits them. This ornament is equally becoming to both sexes; it attracts attention when found in man, and spreads a kind of amiableness over his countenance, by softening his features: those of the black African cease to frighten the timid beauty when he displays his dazzling white teeth. But it is chiefly to women that fine teeth are necessary, since they are intended to please our eyes, prior to captivating our hearts. What justifies the pre-eminence I give to the teeth over the charms of the face, is the influence which they exercise over beauty: let a female be possessed of fine eyes, a pretty mouth, a pretty nose, a fine forehead, beautiful hair, and a charming complexion; if she has ugly teeth, vitiated, broken, covered over with thick fur, or with a slimy covering, if, in short, they send forth a corrupt smell, (which her neighbors find out before she does herself,) she cannot be thought handsome from the moment she opens her mouth; she herself, conscious of the sad effect of her smiles, acts with constraint, and has recourse to grimace, with a view of concealing the injury which her teeth have endured. If, on the contrary, she should have a large nose, small eyes, if even she were ugly, provided her teeth be regularly placed, that they be white, and especially that she retains her full number, or at least all that can be seen; unless, indeed, that woman was a true fright, her face will appear agreeable as soon as a smile comes to her assistance; and you will hear the observations so consoling to her vanity: "she has fine teeth," "beautiful teeth," "splendid teeth."—*Gerbeaux. Dictionnaire des sciences Medicales par M. Fournier.*

There are different opinions among nations as to what constitutes beautiful teeth. Civilized nations consider sound, well formed, regular and white teeth, the most beautiful. There are savage or barbarous nations who entertain a different opinion, and have various fancies about their teeth; some think they cannot be too black to be beautiful. The married women of Java dye their teeth black, which is supposed to be a mark of distinction. The women of the Marian Islands also blacken their teeth. The inhabitants of Sumatra and Malacca have the same custom;

EFFECTS OF DISEASED TEETH GUMS AND SOCKETS UPON THE CONSTITUTION.

It is a law of the animal economy, that when any part of the system is diseased, the whole system becomes sympathetically affected, and suffers in proportion to the extent of the local malady, modified by its seat, the constitution and the state of the general system. Hence, the disease of the teeth and their appendages must affect the constitution, and from their situation and the intimate connexion existing between the nerves of the teeth and of the general system, by means of the fifth pair and great sympathetic nerve, the constitution must sometimes suffer severely, as a thousand facts constantly occurring amply prove.

The local affections caused by diseased teeth, gum and sockets, are sympathetic pains in those parts most intimately connected with them, as pains in the face, inflamed eyes, ear ache, nervous head ache, tic-doloureux, defective smell and taste, and diseases of the jaw bones: most of these are at once explained by referring to the fifth pair of nerves, which is the grand medium of sensation to the face and head. (See page 17.)

There can also be no doubt but that diseases in the

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these people are said to blacken the teeth from an idea they entertain, that men ought not to have white teeth like brutes. The Toquincse and Siamese also employ every art for this purpose.

In some of the East India Islands, the people gild the two *front incisores* of the upper jaw, and blacken the adjoining teeth. In New Zeeland and some other Islands in the Pacific, a golden tooth is an ensign of royalty.

Some savage tribes have fanciful notions as to the shape of the teeth. The Abyssinian negroes file off the corners, so as to make them spear pointed. The Mallay Indians cut groves across the *incisores* of the upper jaw.

The savages on the northwest coast of America, have a whimsical custom with respect to the mouth. These people appear at first sight to have two mouths, which effect is produced in this manner. They make an incision through the upper lip, parrallel with the mouth, and when the wound has healed, they adjust a shell to the artificial mouth, which is cut to resemble a row of teeth.

mouth often severely affect the constitution, and are conducive to several diseases of the general system: this will not appear supprising, when we consider the intimate connexion existing between the teeth and their relative parts, and between these and the general system—the great irritation that is frequently going on in the mouth, from extensive disease in the teeth, gums and sockets—the immense quantity of morbid matter discharged—the great pain often experienced—the imperfect manner in which the function of mastication is performed, and the importance of this function to digestion, and the peculiarity of constitution in different individuals. That the local diseases of the mouth have considerable effect upon the general system, is sanctioned by some of the best medical writers, and is amply proved by the many cases on record, and the many occuring every day to the observation of the physician. Every one is aware of the violent constitutional derangement that so frequently occurs from tooth ache, swelled face, gum-biles, &c.

The exciting causes of the malignant diseases of the jaw bones, of such frequent occurrence in this country, and always requiring a formidable operation, (no less than the partial or complete extirpation of the jaw affected,) to prevent a fatal termination, are undoubtedly local diseases of the teeth. There is always something constitutional that predisposes to malignant diseases, yet they generally remain dormant, unless some local injury bring them into action. So with the diseases of the jaws; they do not often make their appearance, unless there be local irritation from dead teeth and stumps, from diseases of the gum and sockets, or injury done to the jaw by the operation of extracting the teeth.

That distressing malady, tic-douloureux, or nerve ache of the face often, according to dental writers, and even some medical writers, (and they cite an abundance of cases to prove it,) are often produced by the diseases of the mouth. We have seen two well marked cases of this disease, and that it was caused by the diseased state of the teeth and gums, is proved

by the fact, that a perfect cure was effected, by directing the treatment to the mouth.

"The preservation of the teeth is of the utmost importance not only as organs useful to the body, but on account of other parts with which they are connected; for diseases of the teeth are apt to produce diseases in the neighboring parts, frequently of very serious consequence.

"One might at first imagine, that the diseases of the teeth are very simple, and like those which take place every where else in the bony parts of our body; but experience shows the contrary. The teeth being singular in their structure have diseases peculiar to themselves. These diseases considered abstractly, are indeed very simple; but by the relations which they bear to the body in general, and to the parts with which they are immediately connected, they become extremely complicated. The diseases which may arise in consequence of those of the teeth are various, such as abscesses, carious jaw bones, &c.—*Hunter, page* 132.

"When we consider how often the teeth, when decayed, are exposed to irritation from hot and cold drinks and aliments, from pressure by mortification, and from the cold air, and how intimate the connexion of the mouth is with the whole system, I am disposed to believe they are often unsuspected causes of general and particularly of nervous diseases. When we add to the list of those diseases, the morbid effects of the acrid and putrid matters which are sometimes discharged from carious teeth, or from ulcers in the gums created by them, also the influence which both have in preventing perfect mastication, and the connexion of that animal function with good health, I cannot help thinking that our success in the treatment of all chronic diseases would be very much promoted by directing our enquiries into the state of the teeth in sick people, and by advising their extraction in every case in which they are decayed."—*Dr. Rush's Medical Enquiries, Vol. I. page* 201.

IMPORTANCE OF THE PRESERVATION OF THE BACK TEETH.

Many persons do not appear to care much about the preservation of the *back teeth*, though they are very anxious to preserve the front ones for appearance's sake; those teeth out of view being thought comparatively of little importance. The loss of the back teeth not only destroys the masticatory apparatus, and is thus conducive to derangement of the digestive organs, and the whole system, as well as being productive of the local diseases of the mouth and jaw bones, but their loss is very apt to occasion the premature decay of the front teeth; for in this case, the whole force of mastication comes upon them, and this undue action, being constantly exerted, wastes their substance, or occasions disease in their sockets, and at length they drop out perfectly sound. Hence the preservation of the *molar* teeth is of more importance than of the *incisores*. Another circumstance, if the back teeth be preserved, so as to keep the jaws asunder, artificial teeth may be substituted and used with great ease and comfort, in case of the loss of the front teeth; but reverse the supposition, and artifical teeth cannot be employed with any comfort, unless a whole set be substituted, for obvious reasons.

OPERATIONS ON THE TEETH OF PREGNANT WOMEN.

"The prejudices existing against dental operations during the time of pregnancy, are founded on the mal-practices of daring men, or of unskillful operators, and hence the prevalent notion that it is better to suffer from a slight disease, than from a painful and hazardous dental treatment.

"I have never been deterred from performing any operation, the necessity for which was sufficiently indicated, by the circumstance of pregnancy, or of suckling, provided the individual was willing to submit to it; and particularly, if the object was to relieve the patient from immediate suffering. A judicious treatment of the teeth and gums, when circumstances

require such treatment, will not only benefit the health of the mother but of the child.

"In the year 1819, in the presence of William P. Dewees, M. D. and Lecturer of Midwifery, &c. of Philadelphia, I extracted fifteen decayed and dead teeth and roots in the space of twenty-five minutes, from the mouth of a lady who was, I believe, in the fifth month of her pregnancy, and the result was immediate relief and eventual benefit to the health of the mother, and impunity to the life and health of the child.

"This case and many others which occurred under the immediate observation of two of the most eminent accoucheurs of the United States, viz. Nath. Chapman, M. D. and Prof. of the Instit. and Prac. of Medicine in the University of Pennsylvania, and Dr. Dewees, whom I have already mentioned, had in a great measure the effect of removing the prejudice against dental operations during pregnancy from the minds of the liberal members of the Medical Faculty in Philadelphia; a prejudice too frequently entertained, not only by the public at large, but by physicians and surgeons; and generally productive of much suffering to the mother, and no doubt of injury to her child yet unborn.

"The effect of such a treatment depends in a great measure on the judgment and skill of the dentist; and in the absence of the required skill and judgment, the individual would necessarily be exposed to the danger of the malpractices of Dental Surgery, and especially of the barbarous methods in which the various operations are so frequently performed.

"In the conduct of such operations, it would be the obvious duty of the dentist to watch carefully the immediate effects of such operations, both upon the mind and upon the body of his patients, and to judge how far their powers might be capable of supporting the unavoidable irritation and pain produced by them; a duty, however, of which the performance could not be reasonably expected from a mechanical and ignorant operator."—*Koecker page* 137.

We think the above observations of Mr. Koecker very judi-

cious. That the teeth of women are more subject to decay, and decay faster during pregnancy than at other times, is a fact long noted in the records of medicine; and it is surprising how much some women suffer from tooth ache, and its concomitants, during this state, rather than submit to any dental treatment. *As a general rule, operations may be performed on the teeth during the pregnant state, without incuring any risk: we have frequently seen this put to the test of experience, and have often done it ourself.*

No person, however, who understands himself, will be so rash as to perform these operations, under the above circumstances, without consulting the condition of his patient, and the state of her nervous system.

MANAGEMENT OF THE TEETH

FROM

INFANCY TO OLD AGE.

In this chapter, which we devote to the management of the teeth, we shall attempt to give such general directions, in a summary manner, as we deem requisite for the care and proper management of them, in order to their preservation, from the time of their appearance to old age. And as no single individual can exercise the proper care for the same set, through this entire period, our observations or directions will be made for a guide to nurses, mothers, and to such as may attempt to manage the teeth during infancy and youth, as well as to the individual possessor of them, who, it is supposed, after a certain age, will take that office upon himself. And, as we intend these directions for popular or general use, as a kind of chart or directory to all who may desire to be directed, our observations must necessarily be general and brief; and we shall study to have them couched in as plain and familiar language, as possible, and not be so scrupilous about

method, accuracy of discriptive and professional diction, as if we were writing solely for professional readers. Yet, as it will be necessary to adopt some order, we shall take up the subject at early infancy, and follow it up progressively to old age, with as much precision as the nature of it, and our proposed manner of treating it, will admit. This order, though objectionable in some respects, is the most natural one that we can adopt; and though the appearances which we describe may not be exhibited in every diseased mouth; and if they be so, are not exhibited at the exact period which we assign to them, in our order of description, yet, in a majority of months, they will obtain.

Another reason justifying us in not being methodical in our discription of diseases, is the circumstance, that they have been fully treated of in other parts of the work.

Well then, to proceed to our subject, let us place before us an infant 4 or 5 months old and examine its mouth attentively; we find its jaws regularly formed, their arches evenly turned, their opposite surfaces or edges smooth and uniform; the arch of the upper jaw projecting a little over and forward of the lower one, and the whole covered with a beautiful, smooth, firm yet elastic and slightly florid substance, called the gum; the pressure of the finger does not give pain; there is no unnatural heat; the saliva is slightly viscid and not over abundant; there is no swelling, discoloration, roughness, blotch or simple; it looks as if its pristine purity had not been marred by either the extremes of heat or cold, by sweets or acids, by hot and stimulating ingredients and spices, by ruinous alchoholic potions, by any drugs, or by any aliments, save what simple unsophisticated nature designed for it: in a word it has had nothing but the grateful nourishment afforded by its mother: this is the mouth of a child in a healthy state. Let us look upon it often, and with a discriminating eye, in order that we may become familiar with its appearance, and thereby be enabled to detect the approach of disease; let us not look upon it with an "unconscious gaze," or with the

vacant stare of the maniac, who, the more he stares, the less he discerns : in order to avoid this, let us commence at some point, and examine the whole successively and minutely, and note any appearance, however small, or trivial, that does not correspond with the healthy appearances above described. In this manner, with a little attention and practice, we shall be able to detect the least appearance of disease; but, if we examine with a hurried, general, and indistinct glance at the parts, our information will be corresponding, and of little value. Those persons who examine thus may wait and wait, until their abused vision will painfully behold what a more discriminating one, with a little manual aid might easily have averted.

This appearance it should maintain up to the sixth or eighth month of its age; the common time for the commencement of the first dentition, at which time, the gums, instead of exhibiting the appearance above described, will become at certain points swollen, discolored or more florid; and to the touch less elastic and more tender, more heat, and betraying an itching sensation; the saliva will be more viscid and abundant, all of which will be the concomitants of symptoms of a more general character, but which need not be enumerated here; this is the commencement of the first dentition. The period is somewhat critical, and the symptoms will need to be closely watched, in order to see that the teeth pierce the gums without too much delay, and without occasioning too much nervous irritation; which if found to be the case, the process must be aided and accelerated by scarifying the gums; that is, cutting them through with a sharp instrument directly at the swollen points and over the advancing tooth; and if the tooth lie deep, the incision should be made crucial or crosswise, and kept open by means of a little lint pressed into it, or the operation will need to be repeated until the tooth finds its way quite through the gum.

These symptoms will recur in a greater or less degree, and this process need to be observed until the child gets ten teeth

in each jaw, which make the number constituting the first dentition, and will carry the child to two or three years of age. For further information on this subject, see "Teething," page 31.

When the first dentition is completed, the child has twenty beautiful pearls, well arranged, without spot or blemish, and very highly polished. It would seem that these perfect teeth need not be subject to corrosion and disease, yet so it is. Shall we like all culprits who wish to throw the blame from their own shoulders, attribute it to the innocent reproach of nature? I tell ye nay, for in a majority of cases, the difficulty is the result of neglect, causes not attributable to nature, and which if watched with that care which the importance of the teeth justly demands, would be perfectly under our control. The teeth would not so often be found defective, painful, rotten and broken off, for the diseases of the teeth, do not often spring up instantaneously, like the many heads of the formidable *hydra;* but, on the contrary, it is feeble in its commencement, and slow in its progress and operation; hence it may easily be combatted and overcome. Notwithstanding, a description of the means necessary to be used to accomplish this object, will prove of very little advantage, for the temporary teeth are generally considered of very little importance, and not worth any attention, as they are soon to be superceded by the permanent set: this is very true, but it is of great importance to the permanent teeth, that the mouth be kept healthy, as the following case will illustrate.

Extracted this day, the two first permanent *molares* of the lower jaw; these teeth decayed on the side, in contact with the temporary *molares* which were decaying, the disease having been communicated to them by the latter teeth.

A tooth decaying on its side is sure to produce disease in the one contiguous, from the chemical action of the acrimonious matter generated in it.

To proceed then, for the benefit of those who may wish to be informed. The first change that will take place in these

apparently so well constructed organs, will, in its commencement, be slight and scarcely perceptible; yet will nevertheless, be destructive in its tendency. This change will often be a slightly brownish appearance on the front of the *incisor* teeth, near the gum, most frequently in the upper jaw, which gradually becomes more and more brown, until it may, in common language be denominated a brown scurf, hard to be removed. On examining such teeth minutely, this appearance will be found not confined to the surface; for the enamel will be rough, and could it be examined with a microscope would be found full of thousands of little ragged cavities or depressions, which evidently have been occasioned by the disorganizing action of external agents, and these cells or cavities are filled with foreign substances, which being long retained, acquire acrimonious properties, and here the disease is perpetuated, and made to progress, until each cell enlarging, the whole surface and thickness of the enamel is destroyed, and the bony portion of the teeth being thus exposed, presents but little resistance, and in its turn is soon, very soon, wasted by the disease, until at length, the teeth having become frail, are by some slight shock broken off, and we see the child going about, making his expressions in lisping accents, which to the experienced ear at once betrays his loss.

That this disease is the effect of chemical action, is evident from the fact, that it commences externally in the enamel, which is eroded: also, that in applying scaling instruments for its removal, we cut it off, and as we repeat stroke after stroke with the instrument, we observe that the main parts are removed, and that the cavities diminish in the size of their diameters and in their numbers, as we progress, until at length, we entirely obliterate them, unless the disease has penetrated the enamel.

Where this disease occurs, the saliva will generally be found viscid or ropy, abundant and unhealthy; hence it is obvious, that the corrosive action is occasioned by the state of the saliva,

aided by filth, which is the consequence of neglect of the teeth, or in want of due attention to cleanliness.

Cure.—Cut away the disorganized parts and polish the surfaces of the teeth.

Prevention.—Brush the teeth daily, and keep them clean. If the brush be not enough to effect this, a tooth powder must be used. When the disease commences, it may at once be stopped by cutting it away, and polishing with bits of soft wood and polishing powder.

Remarks.—The above disease is not peculiar to the temporary teeth: it is very apt to attack the permanent teeth of young persons, and there is nothing more destructive to them and productive of external decay; for as soon as the enamel is destroyed, the bone of the teeth, exposed to the further action of the same agents, will decay. The scurf is generally seen thickest on the teeth near the gums, where the enamel is thinest and soon destroyed; it also occurs to persons more advanced in life. Let no person who values his teeth, his comfort, his health, or regards his purse, be so foolish as to permit the disease in question, so perfectly under his control, to destroy his teeth, as though they were of no value, or the disease could not be prevented, any more than "the deadly blast from the desert air."

Tooth Apparatus.—As some kind of apparatus will, at all times, be indispensably necessary for the good management of the teeth, we shall mention a simple one, which ought, (or something else in lieu of it,) to be in the possession of every individual.

First—Tooth brushes of such forms as to be adapted to all the surfaces of the teeth, (see page 163,) and they will need to vary in size and shape in conformity to the size and circumstances of the mouth for which they are designed.

Second—A piece of soft wood, of a convenient size and length to hold one end in the fingers, with the other applied to the teeth in any part of the mouth, this end being made thin and a little beveling, and broomed a little: this is to be

used with polishing powder, in order to keep the teeth polished in their interstices, where the brush has no effect: sticks of various thickness may be required, or altered at pleasure.

Third—A fine steel instrument with a hooked point for removing any collection of tartar, foreign matter, or speck that may occur on the teeth.

Fourth—An approved tooth powder.

Fifth—A polishing powder to be used as occasion may require with the bits of wood mentioned above. This powder should be pumice stone very finely pulverized; it cannot well be made too fine: crocus two parts and pumice stone two parts, may be used if preferred: silk thread used with this powder is admirable for polishing between the front teeth.

Some dentists recommend thread of waxed silk for passing between the front teeth to clean their interstices; few will give themselves the trouble to use it; tooth picks are most useful implements, and ought to be used after every meal.

With this apparatus, and with a little care, every person can keep his teeth clean, and we may mention once for all (its importance cannot be too strongly urged,) keep the teeth perfectly clean and of the natural polish, use the brush morning and evening, and a tooth powder in the morning if necessary, and use it freely enough to effect the object of its use. See "importance of cleanliness of the mouth," page 162; "brushing the teeth," page 164; "tooth powders," page 168.

The decay of the temporary teeth, or the means that might be employed to arrest its progress, need not be mentioned. It is only necessary to keep watch that these teeth when diseased, do not injure the permanent ones.

MANAGEMENT OF THE PERMANENT TEETH.

Let the second dentition be so managed, that a regular and beautiful set of teeth be ensured. For the management of the teeth during the second dentition, see page 39. If there is a certainty that the teeth will be crowded, when the jaws are fully formed, from conformation of the teeth and parts, the two

posterior *bicuspides* in either jaw should be extracted; but first, examine the four permanent *molares*, and if these teeth be defective, let them be removed in preference to the former. When the first permanent *molares* decay early so that they cannot be preserved, let them be early extracted: this is for the *preventive treatment* of decay, and is of the greatest importance. More than one half the diseases of the teeth may be prevented. See pages 97 to 104.

In order that the permanent teeth may be preserved to the end of life, it will be necessary to bestow upon them that attention which their importance demands; to use every means in our power for the prevention of disease, and the cure of it in its earliest stages. The diseases we have most to apprehend in youth are the *brown scurf*, just described, page 191, and decay. Whenever the following symptoms can be observed, look out, for decay has commenced and will certainly destroy the teeth, sooner or later, if it be not arrested. Therefore apply without delay to a thorough dentist.

Let us examine critically and minutely the teeth throughout the mouth, (these observations are equally applicable to the teeth at any age,) and first the front and small double teeth on their sides: very often you will perceive a brownish or bluish appearance on the surfaces of these teeth opposite each other, and this appearance will be more or less perceptible, according to the quantity of foreign matter collected there, or the progress of the disease: apply the sticks of soft wood, described page 192, and the polishing powder, and remove the discoloration if possible; if this cannot be done, the enamel at the points affected will be found rough, discolored and perhaps completely destroyed. Let no time be lost in having these teeth separated and the filed sides nicely polished. (See "filing the teeth," page 128.) Again examine these teeth; the *incisores* on the inner surface at the protuberance near the gum; the *bicuspides* between the two points on the grinding surface, and you will occasionally perceive a black spot; let it be removed and the place polished: perhaps the teeth will require plugging, which is often the case: these teeth also

decay on the external side, (though rarely if kept clean,) next the gum; have it cut carefully away in its incipient stage. Let us proceed in our examination to the *molar* teeth; look directly at the grinding surfaces of these teeth, in the lowest depression, usually in the centre of them, and you will often perceive a dark or bluish spot. To the inexperienced observer, this appearance will be attributed simply to the lodgement of foreign matter, and will be supposed not to penetrate the enamel; but apply your sticks and powder or a probe and lock of cotton and you cannot remove it: it is decay, and will often, ere this, have made considerable progress, even have penetrated more than half way to the nerve; indeed, the bony portion of the tooth will often have decayed so much, as to considerably undermine the enamel, even though there be apparently no external opening: therefore, have the teeth opened at once, the disease extirpated and the cavities plugged in the most substantial manner. As you value the teeth do not delay the operation; remember "a stitch in time saves nine." The operation will not cost half the pain that it will if neglected, and it is always sure of success: if it be delayed till the nerve is exposed, it may be difficult to preserve the tooth, and at best the operation must be vastly more painful, and not so sure of success; besides, what can be gained by delay? It is a great fault with the generality of persons, that they do not have dental operations performed so early as they ought, in order to obtain the greatest possible benefit and the most satisfactory results.

Again, let us continue our examination; a black spot will be observed on the *molar* teeth, on the side midway between the gum and grinding surface: let it be attended to; these teeth also decay on the side near the gum, and on the contiguous sides; let the advice of a judicious dentist be at once pursued.

It is necessary to make but few further observations with respect to the management of the teeth. The diseases by which the teeth are generally lost have been fully described; also, the preventive and curative treatment of them.

One thing more we have to recommend to those who are anxious to preserve the teeth—it is this. Every person should choose a dentist, in whose skill, integrity and fidelity, he can place the firmest reliance, and have his mouth regularly examined once or twice a year; once a year is, generally, enough, but when there is a powerful predisposition in the teeth to decay, the mouth should be examined twice a year or oftener. There are great advantages in this procedure to the *lovers of sound teeth*, for an individual seldom discovers a tooth to be decaying, till the disease has made considerable progress, and very often not till it has progressed to the very nerves and the pangs of tooth ache give him sad warning. Another advantage, it costs the individual nothing more than a little trouble, and the satisfaction of knowing that his teeth are all well, amply repays him.

The peculiar color of decaying teeth, always informs the experienced eye. We have often pointed out to our patients teeth that were decaying, especially the small double teeth, when they, nor their friends could not perceive any symptoms of disease, and have gone to work boldly with the file to separate such teeth in order to enable us to get at the disease for the purpose of plugging, till our distrusting patient and his friends, saw plainly the truth of our assertions. We have often exposed the very nerves of teeth, before we could completely extirpate the disease, in teeth that our patients never dreamed to be decaying. These facts show the importance of our advice; indeed, the positive necessity of its being followed.

"The most useful advice with which I can conclude these remarks, is to urge on every individual the necessity of aiming at the prevention of disease altogether, which can in a great measure be effected without engrossing more time than its importance merits.

"This is a subject which demands the attention of parents, and those we are entrusted with the care of children. It should be the first object of every person so situated, to habit-

uate children to clean their teeth, at least twice a day, and when this practice has been once adopted, it will be continued as a matter of course. Besides this, from the age of six to twelve years in particular, a dentist should be consulted three or four times a year, and at a later period, once or twice for the purpose of examining the teeth, and counteracting, by the timely removal of such causes as may produce disease, any mischief which is likely to take place."—*Parmly's Notes to Brown's Dentologia*, 171.

Many persons think that if they have the teeth once operated on, it is quite enough, and that it will secure them from future decay; this is a great error and has caused the loss of many teeth. We have had many opportunities of examining the mouths of individuals, whose teeth were thoroughly "put to rights" ten years before; in many cases, those teeth that were plugged long before, stood firm amid the ruin of others, sound at the time they were operated on.

The polite semenaries in London and Paris, also in most of the large towns in Great Britain and France, generally have a dentist attached to them, who regularly examines the mouths of the pupils two, three or four times a year, and thus is enabled early to correct any disposition of the teeth to irregularity. We do not so often meet with deformed teeth, among well bred foreigners, as in our own country. It were to be wished that the same plan be adopted in our boarding schools.

"In our modern polite semenaries, the children's teeth are frequently examined and kept in order by a dentist. This is a regulation that prevents much future pain and regret, and one for which they, when grown up, will be far more grateful, than for the lighter accomplishments."—*Murphy, page* 74.

CONCLUDING OBSERVATIONS.

We believe that any person of candor, after having perused the facts presented in this work, will admit that "the loss of the teeth is not a necessary consequence of age," or a necessary result of disease, but that the diseases of the teeth are curable, (how inconsistent to suppose that any disease not malignant, non-curable;) that they may, in a great measure be prevented, and hence, that "*the teeth of most persons, may be preserved to the end of life.*"

That the teeth are very liable to disease in America, is proverbial, both at home and abroad; and it is lamentably true, that many lose more or less of them before the age of twenty years, and that few comparatively pass the age of forty, with perfectly sound teeth. Without the possession of oracles or a prophetic eye, we fear that we may safely claim the prescience to foretel, that the teeth of our countrymen will continue bad to the end of time—that their teeth will be *wasted* forever—that good teeth will be envied and wished for—that thousands of pretty faces will be spoiled for the want of good teeth, and that diseased teeth will continue to be the cause of an infinity of suffering. And why? because people will not be convinced of the importance and necessity of early and constant attention to the teeth, for the preventive and curative treatment of the diseases to which they are subject; or, if they will be, there are so many circumstances to prevent the above treatment from being put into execution.

And first, the *solicitude of the parent*, for the safety of the child, will often prevent the performance of those little and trifling operations sometimes necessary, to ensure the regularity and symmetry of the coming permanent teeth, or for the preventive treatment of decay. What a pity! yet so it is. We have too often witnessed this result; if a child makes a great *ado*, it is no reason why that which is necessary

to be done for his welfare, should be neglected. If flattery, presents, and lastly threats do not induce submission, compulsion is the only alternative: he should have one sympathy, and that sympathy should induce us to enforce what is so necessary to his future welfare, and he will be grateful for it, when he shall have grown to years of discretion.

Second—The trouble of keeping the teeth clean and free of foreign matter. Fie! how much trouble to wash our hands, clip our beards, and *put up our curls.* Not wash the mouth! What part of the frame would delicacy of feeling prompt us to keep more cleanly? What is there more disgusting than a foul mouth, or an offensive breath?

Third—The dread of the pain of dental operation for the cure of the diseases of the teeth. There are many persons, *especially ladies*, who will neglect to have the above operations performed, till the agonies of tooth ache compel them to seek relief, when perhaps disease has made such sad ravages, that little can be done; they have got the idea, that operations on the teeth are dreadfully painful;—they shrink with horror at the thought—the tales of those who have experienced them, (for they exaggerate in a tenfold degree,) tend rather to confirm, than remove their apprehensions. Opinions on this head are so erroneous, so prevalent, and so productive of misfortune, that we must beg the indulgence of the reader for a moment. We have often found the greatest difficulty, notwithstanding the most candid assurances, in removing the alarm and dread of individuals, where there was no occasion for the least apprehension. Here is the truth, as to the real pain of dental operations for the cure of decay: if they be early performed they cost the patient little or no pain—put them off till compelled to have recourse to them, and they are often very painful; some suffer much more than others on account of the difference in the sensibility of the teeth. Finally, many persons suffer far more from the dread of dental operations, than from the actual pain of them. Why put off the operations necessary for the cure of decay? Is pain the reason? You

will pay too dearly. Do you value personal appearance? delay often produces sad deformity. Let him who values his teeth, never neglect either the preventive or curative treatment of their diseases.

Fourth—Quackery and Empiricism. A man, to be enabled perfectly to manage the teeth, and to cure their diseases, must possess some knowledge of medicine and surgery, (see note page 107,) great mechanical skill, honesty and integrity, that he may perform all his operations in the most thorough and perfect manner.

ARTIFICIAL TEETH.*

The loss of the teeth is remedied by the substitution of artificial ones. For this purpose, dentists employ the natural

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* "When a partial deficiency of the teeth is supplied with judgment and skill, it is the means of preserving the remaining natural teeth, by becoming a support to them.

"Entire sets of teeth are worn with great ease and satisfaction, when well made and rightly adapted. The construction and adaption of artificial teeth is an art in which some professors greatly excel others; there must of consequence, be a variety in the value of their works. Some teeth are so ill made and unskilfully adapted, that they are troublesome to the wearer, an impediment to the speech and mastication, and even a greater blemish to the countenance, than want of teeth; those that are well adapted are, on the country, easy, useful and ornamental."—*Joseph Murphy.*

"The greatest improvement on the art of the dentist was a right understanding of the uses of the back teeth; and it is still a matter of astonishment how very few of its professors have emerged from the ignorance of the first dentists; the practice of the latter consisting in fastening the teeth or teeth to be inserted to the adjacent teeth, by means of ligatures. An improvement on this method was to form the artificial teeth of the hardest bone, so as to resemble nature, sockets of the same materials being left so as to resemble the gums. As the bone, from the moisture of the mouth, soon becomes discolored, natural teeth began to be inserted on sockets of bone so nicely adapted to the parts for which they were intended, as to answer the purposes of mastication, &c. without inconvenience; and this method, variously modified, continues still to be the favorite practice with almost every dentist. The state of the back teeth is a matter of the first consideration to the success of the operation of pivotting teeth on old stumps. If the back teeth are wanting,

teeth; the tusk of the hyppopotamus or river-horse; the teeth of animals, usually of the cow, and mineral substances, va-

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the jaws approaching nearer than usual in mastication, a degree of friction on the front teeth ensues, which soon wastes or loosens them. In supplying artificial teeth of every kind, this circumstance ought always to be kept in view; otherwise the operation can never prove honorable to the dentist, nor satisfactory to the patient.

The fixing of artificial teeth on gold plates properly adapted to the gums, is, from its universal applicability, perhaps the best mode now in use. It is, however, when properly executed, the most difficult and least understood. Such are the late improvements by means of gold plates, that where every other method would fail, even in the ablest hands, they can succeed with certainty in this. It has, in fact, given a new tone to the art, and raised it above the imperfections so generally ascribed to it.

"A common method of making these plates of gold was to form them into something like the shape of the parts to be supplied with teeth, by merely bending them with a pair of pliers, and forcing them into their intended place, which naturally forced out the teeth with which the plate came in contact; or if claws or sprigs were added, the same injurious result was produced. Those who improve on this method, have models of the mouth cast in brass, on which the plate was moulded in the way that dies are usually worked upon. So sensible of the difficulty of properly executing this model are many of the first dentists, that they never undertake it at all. The last improvement in gold plates was to cover over with caps, formed out of one plate, such back teeth or stumps as remained when partially worn down by attrition or decay, so as to prevent the contact of the front teeth in mastication.

"A dentist who worked in bone only, would, when a case requiring a gold plate formed into caps for them occurred, be under the necessity of extracting such irregular teeth or stumps as interfered with his operations, or to make a covering of bone so fine as to break in mastication; whereas the use of such gold plate renders extraction unnecessary in every case where the teeth or fangs are not otherwise troublesome. But in many cases, the union of gold and bone are necessary to produce the desired effect."—*Andrew Clark.*

The substitution of teeth on gold plates, is an extremely nice art, in which some dentists greatly excel others. It is of the utmost importance to the possessor of them, that the plates be made to fit perfectly, and do not exert too much pressure on the adjoining teeth or their ruin will be certain, and that too, in a short time. A vast deal of mischief is produced by the unscientific manner, in which many dentists attach artificial teeth to the natural ones. (See note page 109.)

Grafting or pivotting teeth on stumps.—"When either or all of the six front teeth are decayed and painful, or unsightly so as to render their presence disagreeable, natural teeth may be fixed to the roots. Whenever this method of affixing teeth can be adopted, it is far preferable to any other; for as long as the roots remain firm, which is often for many years, we can renew them at any time, without the least inconvenience, as they are independent of any other teeth; they may be fitted so nicely, as to defy detection, even on minute inspection. If the root is sound,

riously called according to their composition, or the fancy of the manufacturer, mineral teeth, silecious metallic teeth, porcelain teeth, and incorruptible teeth. Of all animal substances, the natural teeth are much to be preferred.

Mineral teeth are now manufactured by a very few individuals in this country, in such perfection, that they so closely resemble nature in every particular, as to make it impossible for a common observer to distinguish them from the natural teeth when properly inserted. There is nothing in nature so difficult to imitate, especially from the mineral kingdom, as the teeth, on account of their peculiarities; and first, their semi-transparency; second, their peculiar color which is much the strongest

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they will, by their firmness, answer every purpose, almost equally well as the former natural teeth, whose place they occupy."—*Fuller.*

When a front or small double tooth becomes so much decayed that it cannot be preserved by plugging, the carious crown should be cut off at once, and an artificial tooth substituted. There are great advantages in this procedure, for it is of the utmost value that the stump be sound and healthy in the socket. The vitality of the fang of a tooth does not altogether depend upon the nerve, but rather upon the vascular and vital connexion existing between the socket and fang; hence, if an artificial tooth (a mineral tooth) be properly substituted on a healthy stump, it will often last a great number of years, even twenty or thirty years, and be almost as useful and comfortable as the natural tooth: but if the operation be delayed till the stump be very much decayed, or diseased in its socket, the artificial tooth will not last long and cause much trouble, because the fang has become a dead and foreign body, and gum-biles are frequently the consequence: the fang is at length removed and a tooth substituted on a plate, which if not properly fitted, may play the mischief with the adjoining teeth. We wish to urge the importance of the above advice, for very many persons put off the operation too long; if it must be done, why may it not as well be done first as last? We often hear thoughtless persons, (young ladies especially, of a timid disposition, who, when their teeth begin to decay, will not allow the necessary operations for the cure of the disease, to be performed,) declare that they would not have an artificial tooth, should they lose one by decay.

The loss of a front tooth is felt so much, or the chagrin it occasions is so great, that any person will get its place supplied, even the most menial. The most timid young lady who could not be persuaded to submit to the trouble of having her teeth preserved, will readily suffer the neccessary pain of having those she has lost, replaced.

Finally, the pain which the substitution of a tooth on the stump occasions, if the nerve be dead, is trivial, and not worth minding. The filing of the stump produces nothing more than an unpleasant sensation; even when the nerve is alive, it can be destroyed with very little pain,

next to the gum, and their great variety of tints; and third, their great variety of shape, position, and from collateral circumstances. To overcome all these difficulties, has long been considered a desideratum, and at length, after an infinity of experimental research, has been accomplished by the indefatigable exertions of a few scientific men.

Mineral teeth possess such great advantages over all other kinds of teeth, that it is to be hoped, that their general use will soon banish all others from dentistry: they are greatly to be preferred for these reasons.

First—Natural or animal teeth will decompose more or less rapidly in the mouth: in some mouths, they will not last more than two or three years; in others, they will last six or seven; as a general rule, they will not last more than five years, and then must be renewed. Mineral teeth are indestructible, and therefore in the end are a great saving in expense.

A stump to which an artificial tooth is attached, will last much longer if a mineral tooth, instead of a natural one, be employed, because the natural tooth beginning to decompose, occasions the stump to decay. A mineral tooth does not produce this effect.

Second—The natural or animal teeth soon begin to decompose, and become exceedingly fetid and disgusting. The mineral teeth are always sweet and clean.

The great objection made to mineral teeth, heretofore, has been, that they did not sufficiently imitate nature. The French porcelain teeth which are brought to this country in great quantities; also, those manufactured here by most persons, do not possess the characteristic appearances of the natural teeth, and therefore are detected at a glance.

Mineral teeth are made in America, in much greater perfection, than in any other part of the world, if we can judge from the numerous specimens that have fallen under our observation.

To mention the names of those individuals, who, in our opinion, manufacture mineral teeth in the greatest perfec-

tion, might appear invidious, and is wholly unnecessary, as those interested *will judge for themselves;* yet, we hope we may be allowed the indulgence of saying, without tresspassing on the limits of modesty, or infringing upon the privileges or merits of any individual, that, in our candid judgement, the teeth which possess all the requisite qualities before mentioned, in the greatest perfection, are *Spooner's mineral teeth*, invented by Dr. J. R. Spooner, of Montreal, by a long series of indefat igable, laborious and expensive experiments.

Many specimens of these teeth have been exhibited in New York, and many of them inserted by different dentists in the state; yet the process of manufacturing has been so tedious and expensive, that they have not been offered in the market for general use. They are manufactured by myself and partner in New York, where they can be examined by those who wish to satisfy themselves with respect to their merits.

We believe our teeth superior to all others, (and it is admitted by the disinterested members of the profession,) for these reasons.

First—We get a greater variety of tints than any other manufacturer, which enables us to imitate nature much more closely.

Second—We can mount our teeth on gold plates singly as other dentist do, with solder, the rivet, or the screw. We can also make them in blocks with an artificial gum, or in one entire piece, which circumstance, give us great advantage over others manufacturers of mineral teeth.

GLOSSARY

OF TECHNICAL TERMS.

A.

Anatomy—The dissection of dead bodies so as to expose the structure and uses of the parts.

Abscess—A cavity containing purulent matter.

Absorption, from *absorbeo*, to suck up—A function in an animated body, by which substances applied to the mouths of absorbing vessels are taken up. Thus the nutricious part of the food is absorbed from the alimentary canal.

C.

Calculus—Diminution of *calx*, limestone. Stone or calcarious concretions found in various parts of the body.

Caries—Rottenness, mortification of the bones.

Cartilage—A white, elastic, glistening substance covering the ends of bones, commonly called gristle.

Crystalline lens—A pelucid body of the form of a lens situated in the anterior part of the vitreous humor of the eye. Its use is to transmit and reflect the rays of light.

D.

Dentes—Teeth: the front teeth are termed *incisores* from *incidere*, to cut; the eye teeth *cuspidati* from *cuspis*, a spear, spear-pointed; the small double teeth *bicuspides* from *bis* twice and *cuspis*; and the large double teeth *molares* from *molaris*, a millstone, grinders.

Dentes sapientiæ—Wisdom teeth, last *molares*.

F.

Functions—The functions of the body are divided by physiologists into vital, animal and natural. The vital functions or actions are those indispensible to life, as the action of the heart and lungs. Animal functions are those performed at will, as muscular action and all voluntary motions of the body. The natural functions, are those which may be interrupted for a longer or shorter time without destroying life, as the functions of digestion, of the liver, kidneys, &c.

G.

Gangren—Mortification.

I.

Inflammation from *inflammo*, to burn—A disease characterized by pain, heat, redness and swelling; it terminates in resolution, adhesion, suppuration and mortification.

Inflammation, adhesive—Inflammation in certain tissues of the body, terminates in the pouring out of lymph, which becomes organized and cements the adjoining parts together, and is termed adhesive inflammation.

Internal membrane—The pulp or nerve of a tooth, as it is commonly called.

M.

Mortification—To make dead: termination of inflammation, the violence of which causes the death of the parts involved in the disease.

P.

Pathology—A discourse on disease; the doctrine of diseases.
Periosteum—Round a bone; the membrane that invests the bones.
Pericranium—The membrane that surrounds the skull.
Physiology—A discourse on nature; that science which has for its object, a knowledge of the phenomena proper to living bodies.
Pus—The matter discharged from a sore.
Purulent—Consisting of pus.
Puriform—Having the appearance of pus.

R.

Resolution—A termination of inflammation, in which the disease disappears without forming an abscess or causing mortification.

S.

Suppuration—That action by which pus is formed during inflammation.

V.

Vascularity, from *vas*, a vessel. Vascular having vessels.

ERRATA.

Page 96 line 22, for "preventative and curative treatmen," read *preventive* and curative treatment.

Page 97 line 10, for "who enjoy such health that the secretory organs be not destroyed," read secretory organs be not *deranged*.